JUNE 22, 1953

IN TWO SECTIONS—SECTION ONE

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

Guide for
STAINLESS STEEL
Buyers
SECTION
Growth in the use of stainless steel is increasing the volume of questions as to what mills produce what products. This guide, prepared by the editors of STEEL, is designed to help you locate sources of stainless by products, types and sizes. Included are 28,000 entries, covering 54 producers. For information on base prices of stainless steel, consult the market price section which appears each week in STEEL.
COPYRIGHT, 1953
Section Two
THE EDITORS OF STEEL
PENTON BUILDING • CLEVELAND 13
June 22, 1953

COMPLETE IN THIS ISSUE

The first directory ever compiled to show sizes and types of stainless steels and who produces them in the U. S.

SEE SECTION TWO

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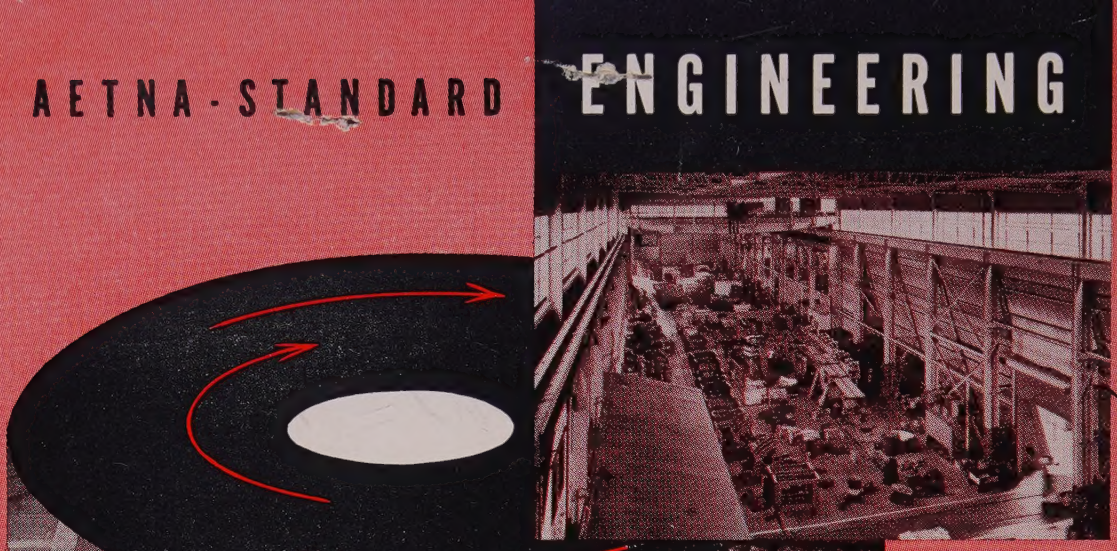
THE AETNA-STANDARD ENGINEERING COMP



Leading Engine
and Builders
of

FLAT-ROLLED
FINISHING
EQUIPMENT

ASSOCIATED COMPANIE

Head Wrightson Machine Compa
Middlesbrough, England—Grea
Finland, Sweden, Norway, Denma
of South Africa, Northern and
Rhodesia.

Aetna-Standard Engineering Compa
Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y.
Central and South America.

Societe de Constructions de Montba
France—France, Belgium, Holland
bourg, Switzerland.

Demag Aktiengesellschaft, Duisb
many—Germany, Austria, Yu
Greece, Turkey, Egypt.

Compagnia Italiana Forme Acciai
Italy—Italy.

Aetna-Japan Company, Ltd., Tokyo
Japan.

Hale & Kullgren, Inc., Akron, Ohi
sentative for the Rubber Industry

Designers and Builders to the F
Non-Ferrous, Leather and Rubber

Aetna-Standard

THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

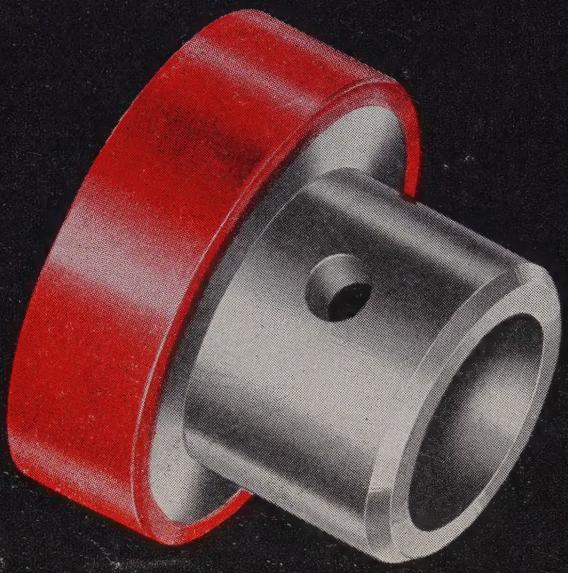
Plants in Warren, Ohio · Ellwood City, Pennsylvania

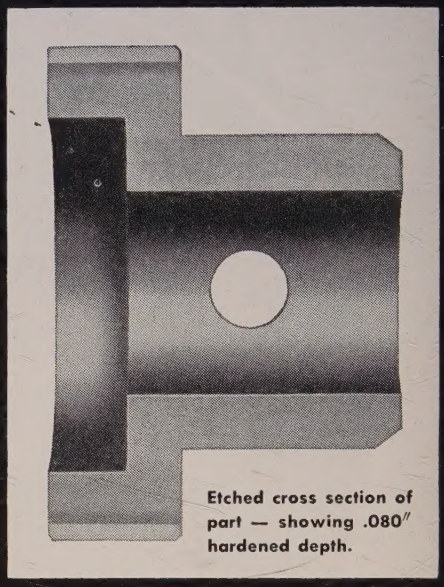
FLANGED-AND-DISHED HEADS Bethlehem spins or presses eight different types of Heads—flanged-only, elliptical, tank-car, obround-tank, double-dished, standard, shallow and ASME Code flanged-and-dished. Diameters of Bethlehem Heads range up to 144 in.; thicknesses range from ⅛ in. to 3½ in. We also produce a full line of standard manholes and covers, hand holes and covers, flue holes, collar flanges and pipe flanges. Tell us about your requirements, regardless of quantity. Please write direct to Bethlehem Steel Company, Bethlehem, Pa.

BETHLEHEM STEEL

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

COSTS CUT 94%





Etched cross section of part — showing .080" hardened depth.

with TOCCO* Induction Heating

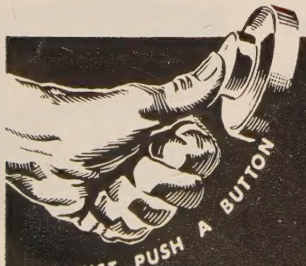
A cost reduction of 94% resulted when heat-treatment of this Corn Harvester part was changed from carburizing to TOCCO-hardening. Look at the unit cost breakdown:

CARBURIZING		TOCCO-Hardening	
Degrease	$0.0020	*eliminated*	
Carburize	0.0200	*eliminated*	
1st quench	0.0150	TOCCO, heat and quench	$0.0060
2nd quench	0.0150	*eliminated*	
Draw	0.0050	*eliminated (self-draw)*	
Shotblast	0.0035	*eliminated*	
Internal Grind	0.0243	*eliminated*	
External Grind	0.0166	*eliminated*	
	$0.1014		$0.0060

"—Savings of 9½ cents per piece $4770.00 on each 50,000 piece batch *plus* an hourly production increase from 120 to 300 pieces per hour *plus* improved quality of the product by virtue of the deeper case and stronger core."

Have you investigated TOCCO cost-savings possibilities for your hardening, brazing, melting or forging operations? Why not write us today or send blueprints of your part —no obligation, of course.

THE OHIO CRANKSHAFT COMPANY



TOCCO

*Trade Mark Reg. U. S. Pat. Off.

Mail Coupon Today

NEW FREE BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. S-6, Cleveland 1, Ohio

Please send copy of "A TOCCO Plan Survey—Your Profit Possibility for 1953".

Name _____

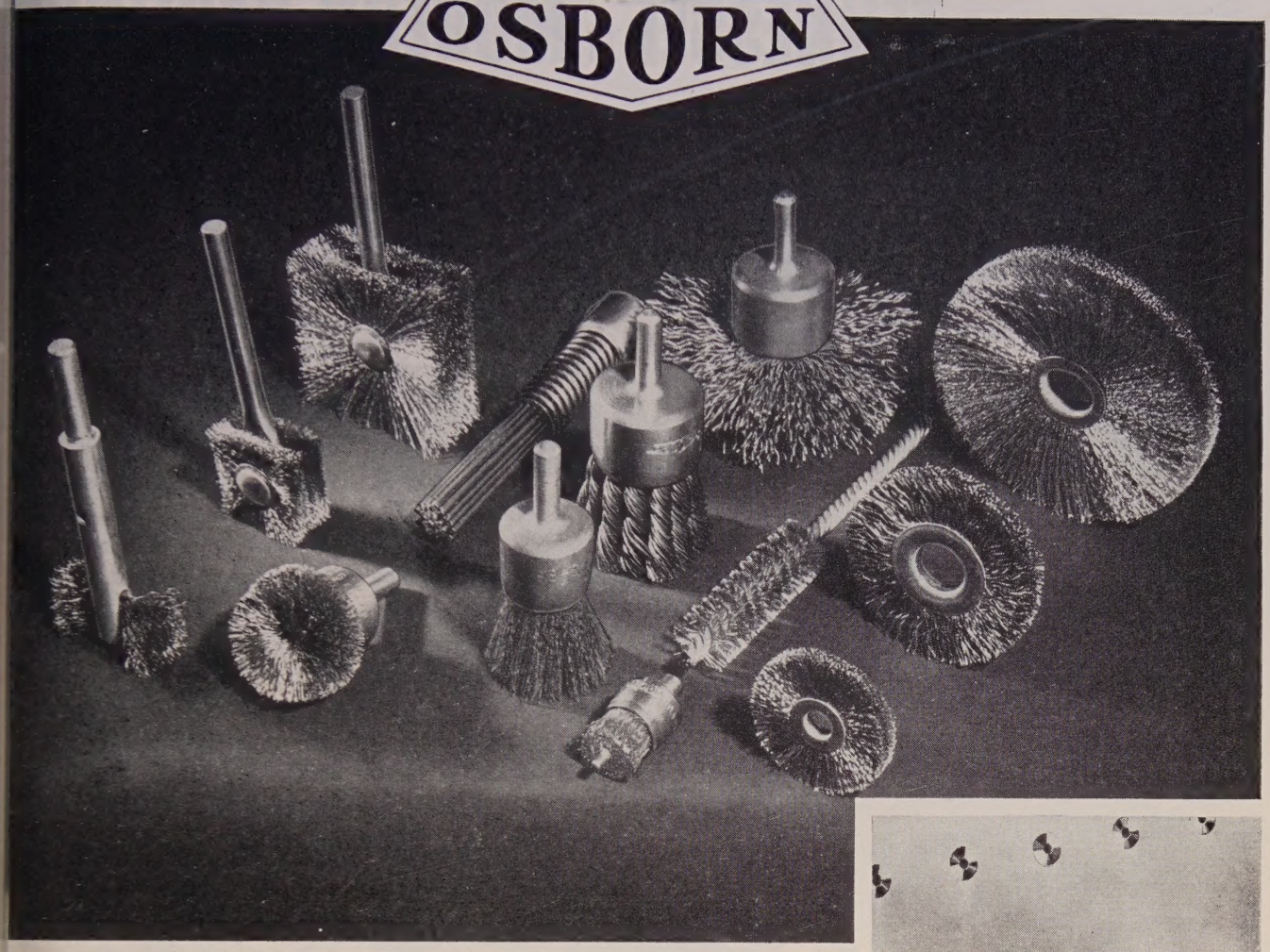
Position _____

Company _____

Address _____

City _____ Zone ___ State ___

OSBORN



Which of these versatile brushes will cut your costs?

Osborn wire brush, automatically located, removes zinc chromate from around rivet holes in aircraft production.

Hard-to-get-at jobs are simplified . . . costly hand operations are eliminated . . . when you switch to one of these special-purpose Osborn power brushes.

These versatile wire brushes are just a few of the complete Osborn line of power brushes for every need. Your Osborn Brushing Analyst will gather necessary facts in your plant . . . study your production equipment and recommend the most efficient, economical power brushing techniques.

The small Osborn brush shown in operation enables one man to do the work of seven men. Output per man went up 700% in this aircraft application of removing zinc chromate priming from around rivet holes in wings and fuselages. Formerly this job was done by hand with small sandpaper discs.

Such results are duplicated every day by Osborn Brushing Analysts. They can solve *your* brushing problems of product cleaning, burr removal, roughing, polishing or finishing with similar startling economies. For complete information at no cost, call your nearby Osborn representative or write to *The Osborn Manufacturing Company, Dept. G-7, 5401 Hamilton Ave., Cleveland 14, Ohio.*

Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

THERE'S A TOUCH OF TENNESSEE IN MODERN CASTINGS

TENNESSEE's famou Diamond "D" pig iron i used from coast to coast i the production of specia castings in which unusua strength and elasticity are required. It is low in phos phorus, manganese an sulphur, high in carbo and is machine cast.

Diamond "D" pig iron i recommended for the pro duction of "Ductile" o "Nodular" iron casting as well as White Iron an electric and acid furnac steel castings.

TENNESSEE also ship Ferromanganese and Fer rosilicon in briquettes an lump form to foundrie throughout the nation These and many othe essential ingredients hav won for TENNESSEE th name of an industry serv ing all industry.

TENNESSE
PRODUCTS & CHEMICA
Corporation
NASHVILLE, TENNESSEE

Producers of: FUELS • METALLURGIC PRODUCTS • TENSULATE BUILDI PRODUCTS • AROMATIC CHEMICA WOOD CHEMICALS • AGRICULTUR CHEMICALS

This Week in Metalworking

STEEL

Vol. 132 No. 25 June 22, 1953

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STEP UP PRODUCTION OF SMALL MACHINERY, TOO! ...with this All-Electric Adjustable-Speed Drive

Eliminate mechanical gear boxes, clutches and variable-pitch cone pulleys..

SAVE MONEY 10 WAYS!

- Boosts output
- Cuts down rejects
- Reduces "down time"
- Cuts changeover time
- Handles more jobs
- Saves Space
- Simplifies machine design
- Reduces operator fatigue
- Increases safety
- Operates from a-c.

Already the Reliance V★S Jr. has brought the benefits of smooth, powerful starting . . . wide speed ranges . . . smooth, fast reversing . . . quick, smooth stopping . . . to users in many industries. Find out today what the V★S Jr. can do for you! D-119

GET THESE FACTS!

New 12-page bulletin contains dimension data, drive characteristics, operating features, applications, components, operating principles. Ask for Bulletin D-2102.

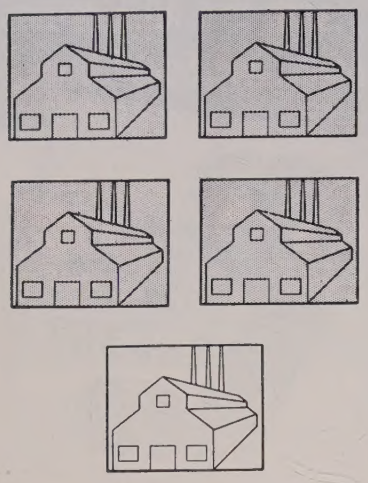
Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND ENGINEERING CO.

1081 Ivanhoe Road • Cleveland 10, Ohio

"Motor-Drive is More Than Power"

4 out of 5



SINCE 1946, five major press plants have been built for the automotive industry to meet the increased demand for passenger cars and trucks.

Commercial Contracting Corporation was selected to install all machinery and equipment in four of these five plants.

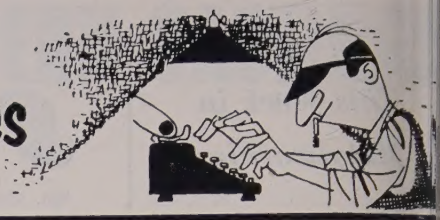
Currently, CCC crews are beginning to place the first shipments of more than 1,000 pieces of equipment to be housed in the sixth such huge press plant constructed in the United States since the War's end.

Erecting heavy presses and other machinery is an important part of our business.

Other CCC services, provided individually or under one PACKAGE contract, include: General Construction, Building Alterations, Demolition, Foundations, Machinery Moving, Crane and Conveyor Installing, and Steel Fabricating.

COMMERCIAL CONTRACTING CORPORATION
GENERAL CONTRACTORS
12160 Cloverdale • Detroit 4

behind the scenes



Reverse English

A jobber friend of ours had been trying for months to collect an overdue bill but to no avail. All his letters, pleas and threats were completely disregarded. As a last resort, he asked our advice which we gave reluctantly, of course.

We framed a tear-jerking letter for him and told him to mail it to his debtor along with a sorrowfully posed picture of his little daughter. As the piece de resistance, we had him write at the bottom of the picture: "The reason I must have my money."

Our friend thanked us for our subtle genius and mailed his letter of passion.

He received a prompt reply. Enclosed was the photo of a voluptuous blonde in an abbreviated bathing suit lounging in the lush comfort of a sun-drenched deck chair. 'Neath the lovely lady were inscribed these words: "The reason I can't pay!"

On Believability

We were in New York last week attending the Basic Materials Show at the Grand Central Palace. Got into a "round-the-table" discussion one evening on the general subject of claims in advertising.

The word-play covered the subject in all its many and complex phases touching on consumer advertising and industrial advertising alike. Fact is, we even touched on the current advertising claims of STEEL and some of the other metalworking papers. The discussion pivoted on the point of "the believability" of advertising claims . . . and there it struck a snag. What's believable and what isn't?

Well, we don't pretend to be expert on the subject but we do want to put in a strong pitch for the fact that truth is sometimes stranger than fiction. And, perhaps, some of the claims that folks are claiming have more truth to them than we sometimes think, maybe. To illustrate, let me quote a for instance:

Once upon a time a beautiful girl was walking through the forest when she came upon a poor little frog w spoke and said, "Lady, once upon time I was a handsome prince but big, black, ugly witch turned me in a frog."

"Oh, that's too bad," said the bea tiful girl. "Is there anything I c do to help you?"

"Yes, indeed!" replied the frog. " you will take me home with you a put me on your pillow, I will saved."

So the kind, helpful, sympathet beautiful girl took the frog hom and that evening when she retir she placed him on the pillow besi her.

The next morning when she awok lo and behold a handsome you prince lay beside her.

And, do you know, to this d that beautiful girl's mother refu to believe that story?

About the Talented Twelve

We took a test the other day to velop whether or not we had any tistic judgment, depth perception design recognition ability. Turned we'd make a good touch-up man Macy's broken toy department.

Thank goodness we do have a f gents holding forth on our fou floor who know something about ma azine art and layout. You can c tainly see it reflected in the cov and pages of STEEL each week, t

We're speaking of Art Director E Kellogg and his talented twelve. Th in collaboration with Assistant E tor Van Caldwell, study each a every article with an eye to mak it more readable and understanda through the use of illustrations, p tographs, charts, tables, cartoo layout and type styling.

Thanks to Bill and his crew, forty or forty-five minutes the erage reader spends with his copy STEEL each week gives him more formation per minute because ST is specially *designed* for fast, e reading.

Shrdlu

(Metalworking Outlook—Page 37)

Where the finish is important...

Specify... SHARON STAINLESS STEELS

Manufacturers of products purchased essentially by women know the value of eye appeal. Jewelry . . . pots and pans . . . utensils in particular, must have appearance as well as be serviceable.

That's where *Sharon Stainless Steels* come in. Manufacturers who have shopped around will tell you that with *Sharon Stainless* you get the finest finishes available . . . finishes that make it easy to fabricate gleaming, lustrous, blemish-free and eye appealing products.

Think of your product in terms of Stainless Steel, and when you do — think of finer finish *Sharon Stainless Steels*.

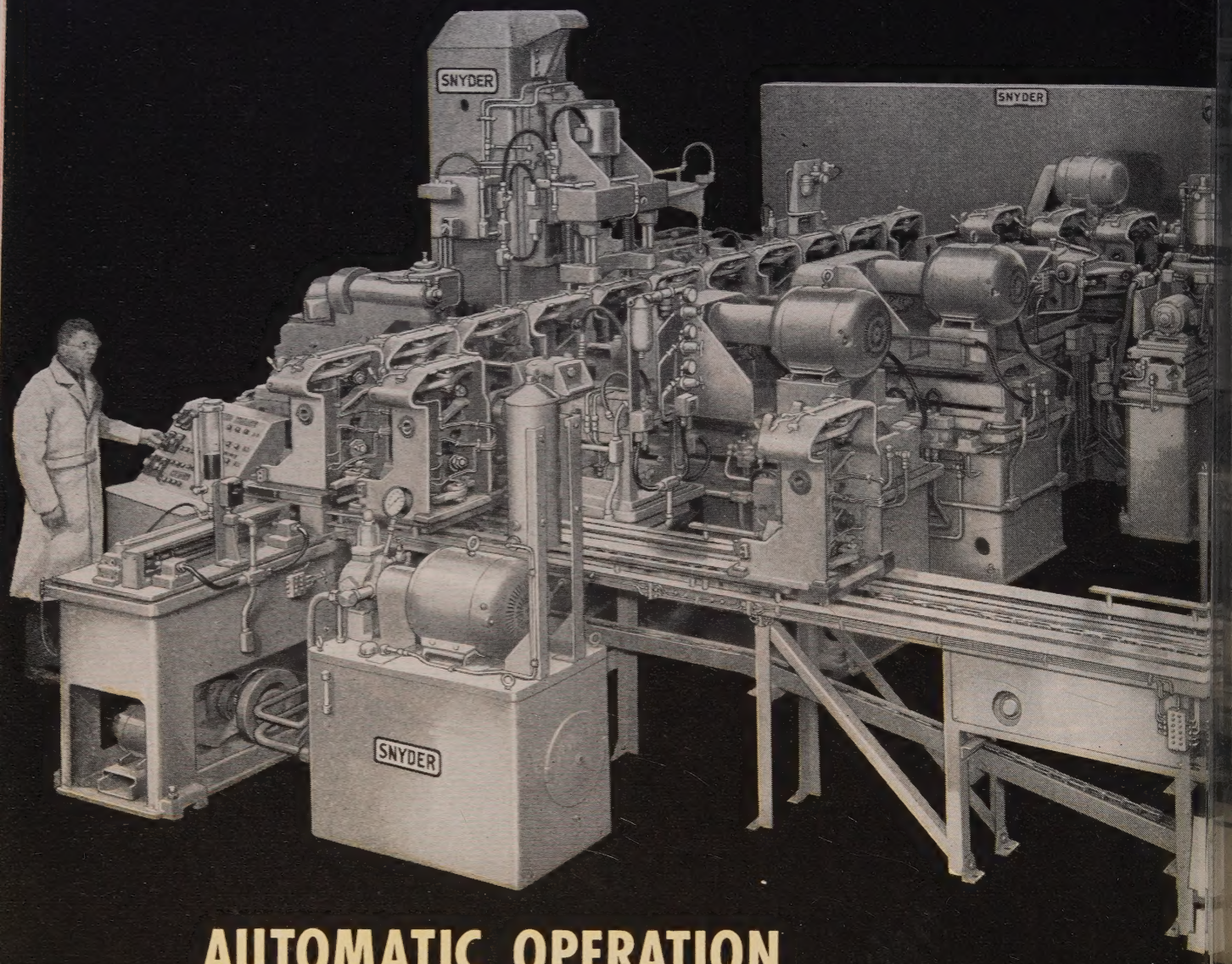
Get the 430 Story — Sharon has prepared a fact-packed, fully illustrated booklet with up-to-the-minute information about 430 Stainless Steel. To get your free copy contact your nearest Sharon representative or write direct. There are Sharon offices in **Chicago, Cincinnati, Cleveland, Dayton, Detroit, Indianapolis, Milwaukee, New York, Philadelphia, Rochester, Los Angeles, San Francisco, Montreal and Toronto.**

SHARONSTEEL

SHARON STEEL CORPORATION

Sharon, Pennsylvania

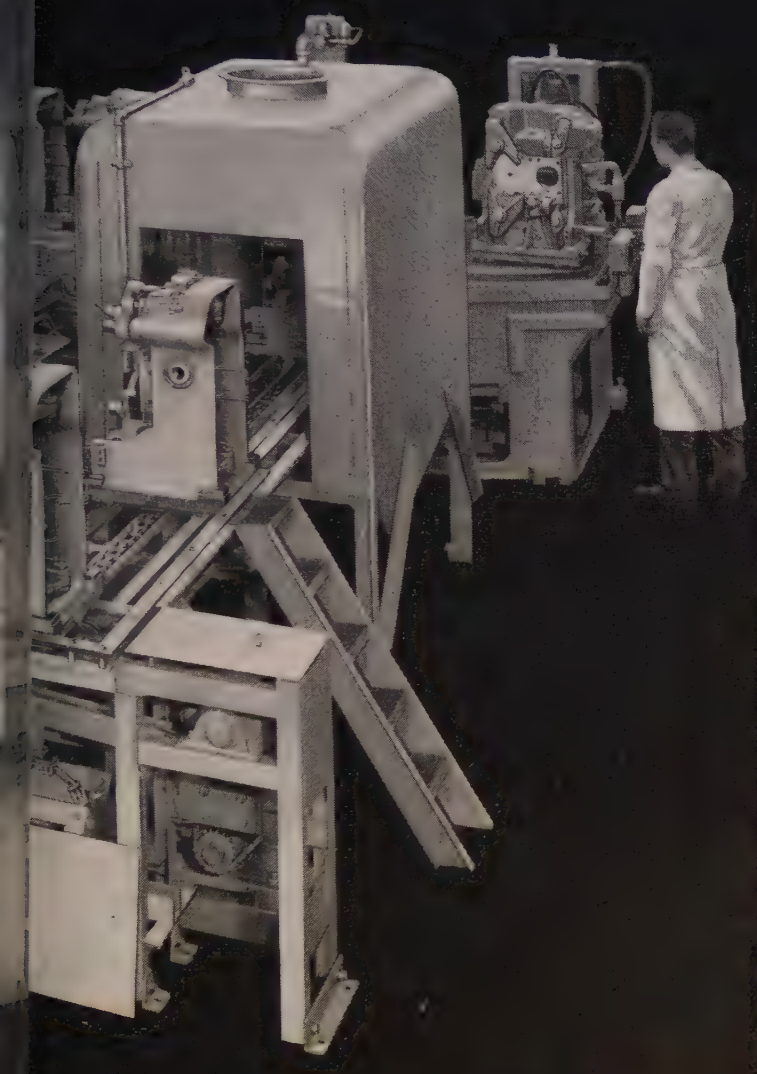
SNYDER MACHINES CONTROL COSTS!

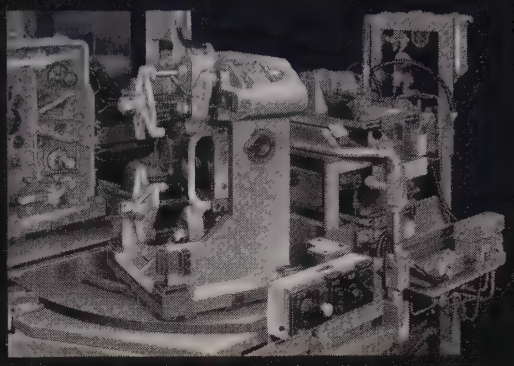


AUTOMATIC OPERATION

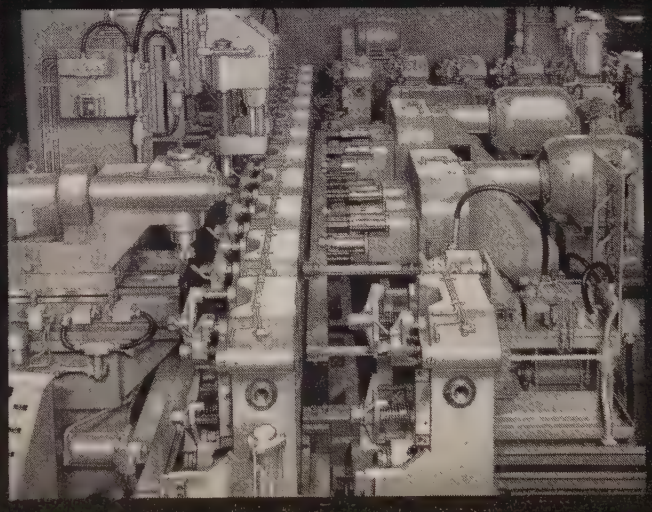
MILLS, DRILLS, TAPS, BORES, COUNTERBORES, COUNTERSINKS FRONT COVERS FOR AUTOMOTIVE ENGINES • AUTOMATIC INDEXING, LOCATING, CLAMPING, AND RELEASING • AUTOMATIC TRANSFER THROUGH TWO-STAGE, CONTINUOUS WORK CYCLE • AUTOMATIC CONTROLS • AUTOMATIC SAFETY INTERLOCKING SYSTEM • AUTOMATIC LUBRICATION • AUTOMATIC CLEANING AND CHIP REMOVAL • SKILLED OPERATORS NOT NEEDED

18 STATION AUTOMATIC TRANSFER
180 FRONT COVERS AN HOUR AT 100% EFFICIENCY





At Station 18 the fixture is rotated 90°, air wrenches unclamp the part so that it is easily removed. The fixture returns to Station 18, engages the return conveyor, is automatically blown clean and returned to the loading station.



Fixtures leaving Section 1 (above) move at right angle so that the other faces and top of the part are exposed to tools. The part enters the work cycle with three ground faces, leaves it ready for assembly.

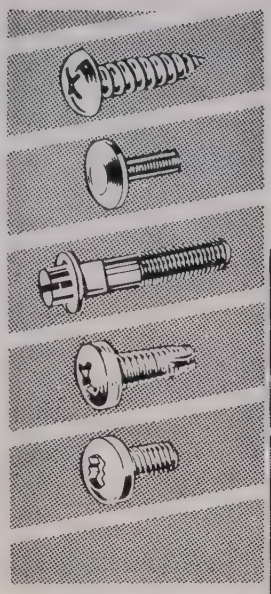
SNYDER

TOOL & ENGINEERING COMPANY

3400 E. LAFAYETTE

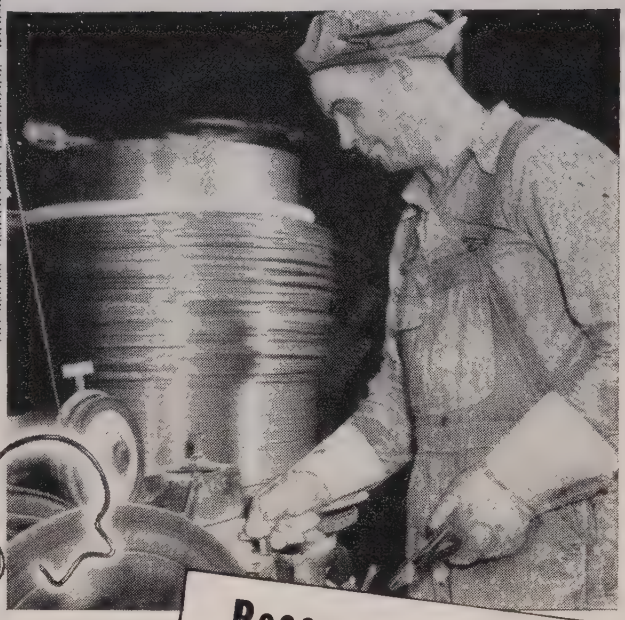
DETROIT 7, MICHIGAN

28 Years of Successful Cooperation with Leading American Industries



KEYSTONE

"SPECIAL PROCESSED" COLD HEADING WIRE



Recommended for Your Difficult Cold Heading Jobs

The severe displacement of metal during the cold heading process requires wire that has been designed *specifically* to meet the requirements of your product. The following analysis of Keystone "Special Processed" Cold Heading Wire is recommended for difficult cold heading:

C1006 - C1012 for Clutch Heads
C1006 - C1022 for Phillips Heads
C1006 - C1022 for Struck Slot Heads
C1108 - C1109 for Phillips Head Wood Screws
C1035 - C1038 for Heat Treated Screws and Bolts

The excellent grain flow properties of this wire assures the desired upsetting and die forming qualities you need for greater efficiency in your particular operation.

INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS

LETTERS
TO THE EDITORS

How To Cut Titanium

We have just received a tear sheet of the article "Guideposts to Titanium Cutting" which appeared in the Mar. 23, 1953 issue of STEEL (p. 76). We would very much appreciate your supplying us with at least four copies of this excellent study. Our congratulations to you and the author, V. J. Gauthier, on assembling one of the most concise and thorough articles on titanium machining yet seen.

Leonard Bassis
Engineering Department
Hi-Shear Rivet Tool Co.
Los Angeles

• *Sent.—ED.*

Tracing Jet Tapping

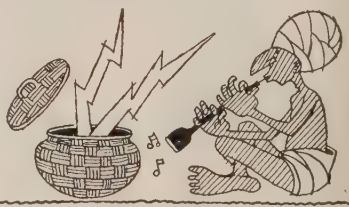
At the request of the Yawata Iron & Steel Co., Japan, we would like to know if you have any data available on "jet tapping."

We trust that jet tapping is the method used to open the taphole of open-hearth furnaces by the use of explosives loaded at the end of a pusher-like mechanism.

M. Lijima
Kyokuto Boeki Kaisha Ltd.
Correspondent Office
New York

• *Details of the Jet Caster for opening the iron notch of blast furnaces and the taphole of open-hearth furnaces were presented in STEEL, Feb. 16, 1948, p. 107, and Feb. 21, 1949, p. 108. These issues are available for your use at our New York office as we have no spare copies in stock.—ED.*

Electronic Magic for India



We refer to your Mar. 16 issue and the article "Industrial Electronics: A Young Giant with Growing Pains" (p. 99). We invite your attention to mass spectrometers and multi-channel oscillographs in the paragraph subheaded "Testing and Measuring" on p. 99.

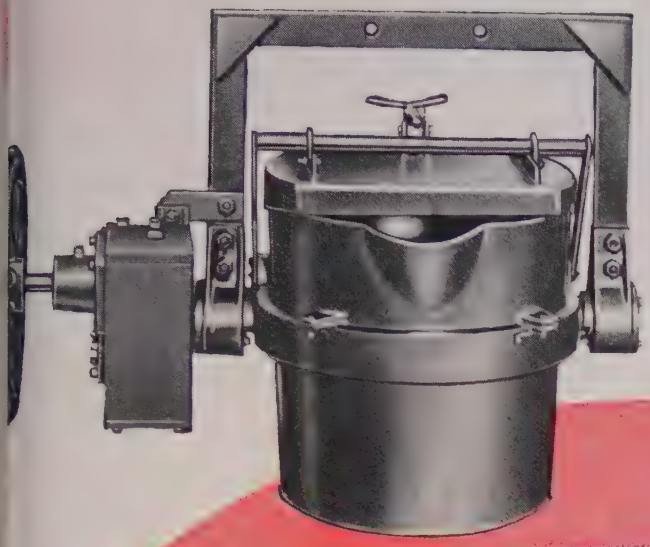
We should be very much obliged if you will broadcast our name to the manufacturers of this new testing apparatus, as we are serious of installing one in our laboratory.

We notice with considerable interest about diamond wheels. We refer here

Please turn to page 12

WHITING

LADLES



COVERED TROLLEY LADLES—Heavy steel plate bowls; air cooled trunnions for trouble free operation. Anti-friction bearings. Improved design minimizes hand-wheel loads. Furnished with or without covers. Capacities (Iron) from 465 to 1400 lbs.

more

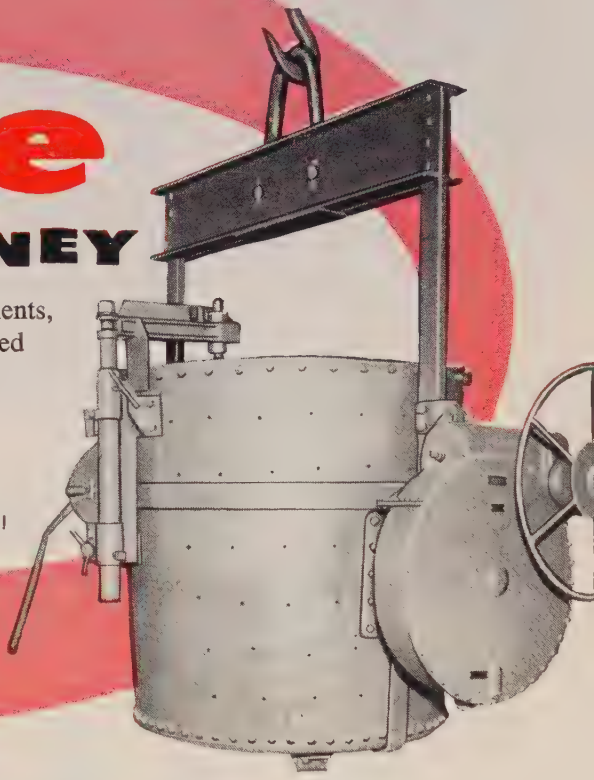
FOR YOUR MONEY

Whiting Ladles, built to meet your special requirements, provide outstanding *exclusive* advantages. Each is designed for greater accuracy and safety, easier control, lower maintenance and longer life.

WHITING CORPORATION

15643 Lathrop Avenue, Harvey, Illinois

A WHITING LADLE TYPE FOR EVERY POURING JOB!
OVER 200 STYLES AND SIZES!

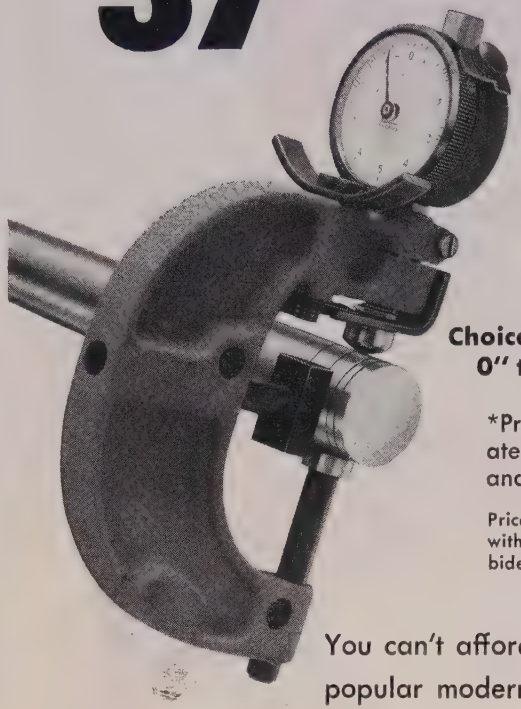


GEARED BOTTOM-TAP LADLES FOR SAFE, EASY POURING—Square bail, equipped with "5-Position" bottom tap rig or "Rack Type" rig. Ruggedly constructed of heavy steel plate, lapped and riveted seams, reinforced with steel bands placed above the trunnions and on the bottom of the bowl. Three supporting feet are also provided on ladle bottom. Capacities (steel) 8,925 to 48,975 lbs.

RIVETED CRANE LADLES — Taper side with V-bail. Seams riveted with flattened heads inside for easier lining. Steel reinforcing belt placed above trunnions which are formed by steel shafts, pressed and welded to large cast steel bases. Overlapping flanges protect journal boxes against spill. Capacities (Iron) from 805 to 8530 lbs.

Send for this complete catalog!

$37.50* buys this Indicating SNAP GAGE



Choice of 3 capacities:
0" to 1", ¾" to 2", 1¾" to 3¼"

*Price includes Indicator graduated .0005" with plain bearings and Hardened Steel anvils.

Price with Indicator graduated .0001" with jewel bearings and Tungsten Carbide anvils $57.50.

You can't afford to be without the most popular modern Indicating Snap Gage. No need of hanging onto antiquated snap gages that depend on blind, uncertain "feel". Experience proves you aren't saving money using old style gages just because you've got them on hand.

With Visual Indicating Gages you get more accurate work with less scrap. They relieve operator uncertainty and frustration. And, they cover a wider gaging range. Larger sizes are available, too. Write for details. Federal Products Corporation, 1216 Eddy Street, Providence 1, Rhode Island.

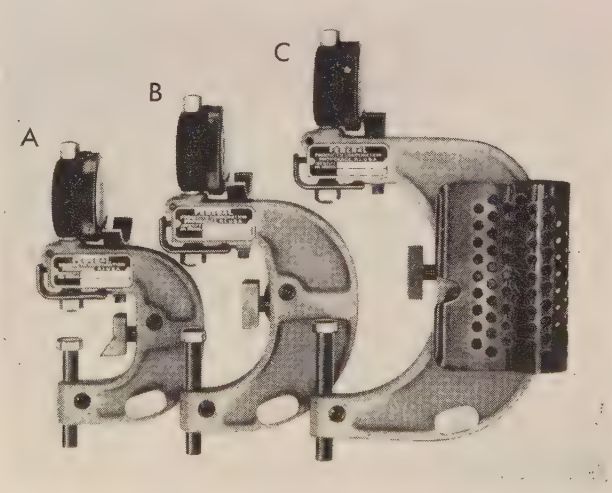
Set of 3 Gages covers all sizes from 0" to 3¼" — replaces rackfuls of old style gages.

A–Model 1000P-1-A
Capacity 0" to 1"

B–Model 1000P-2-A
Capacity ¾" to 2"

C–Model 1000P-3-A
Capacity 1¾" to 3¼"

Larger sizes available.



FEDERAL

Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES.

LETTERS

Concluded from page 10

to the article "Brushing Sharpens Worn Diamond Wheels" (p. 106) in the above issue. We, ourselves, are importers of diamond wheels from England and we should, therefore, like to have the catalog and literature of the manufacturer concerned in your article.

We may be excused for the inconvience caused to you.

F. A. Jasdanwalla
partner
Hakimji Lookmanji
C. P. Tank Road
Bombay 4, India

• *A copy of your letter has been sent to the Osborn Mfg. Co., Cleveland, developer of brush dressing of diamond grinding wheels mentioned in* STEEL's *article.—ED.*

Who and Where Department

Where can we get further information on the process described in your article "Electrolytic Alumina" in the "Engineering News at a Glance" (June 1, p. 107) including applicable patents, operating data, production figures, etc.

Bruce E. Brennan
supervisor, engineering data
Reynolds Metals Co.
Richmond, Va.

• *That process is licensed through the Lobeth Corp. and for further information write to them at 624 S. Michigan Ave., Chicago 5.—ED.*

Trade Associations: Best Yet

In STEEL there is an article entitled "Trade Associations—How To Grow with Them" (Mar. 9, p. 76). This article is the best I have ever read on this subject. I would like to give every member of our council an opportunity to read it. May we have the privilege of publishing it in the June issue of the *Smaller Manufacturer?*

Arthur B. Davies
executive director
Smaller Manufacturers Council
Pittsburgh

• *Permission granted.—ED.*

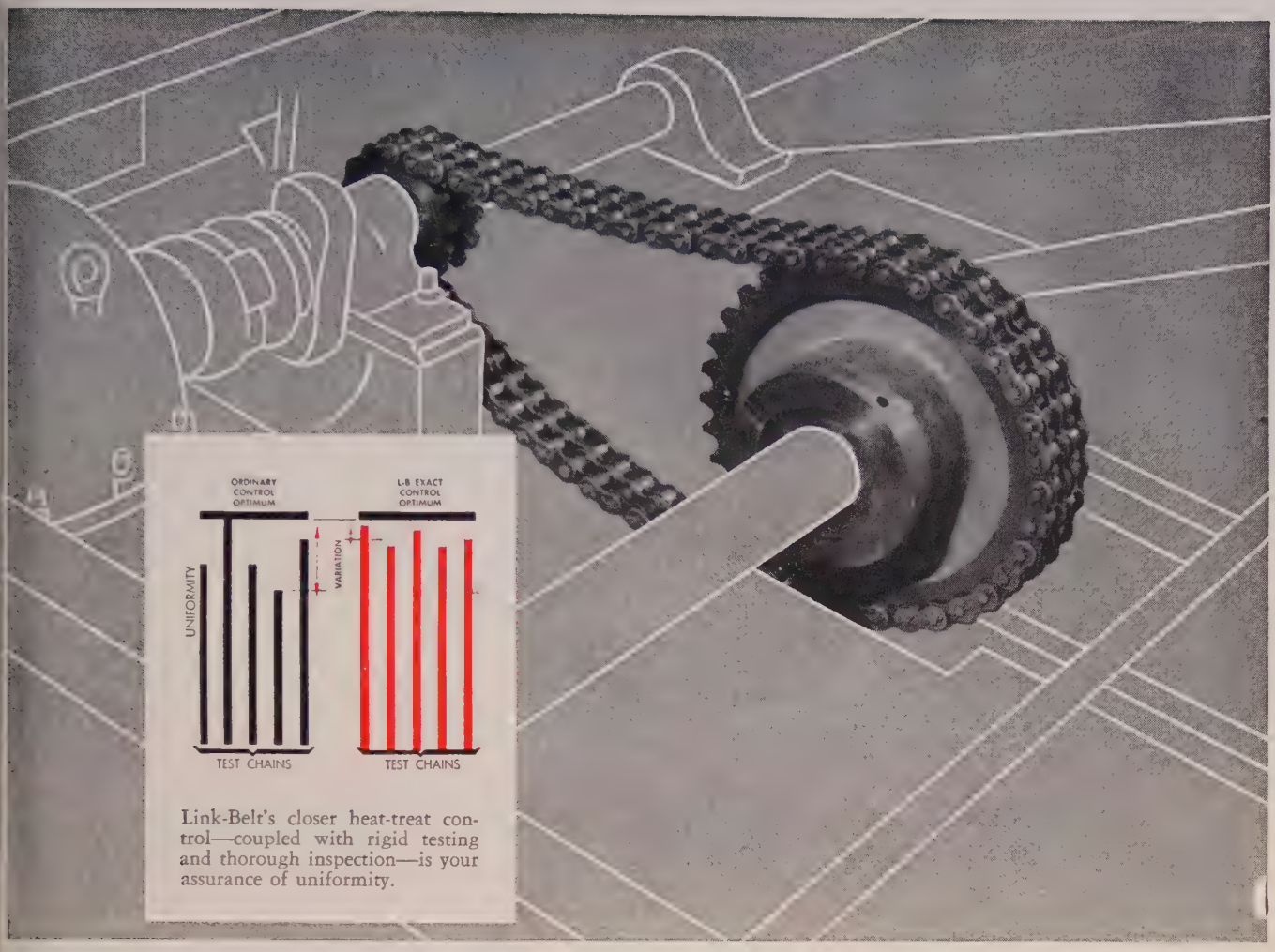
Story of the Handicapped

Your article "The Handicapped: It is Good Business To Employ Them" (May 11, p. 86) was read with great interest here by the staff of the President's Committee.

We think the readers of our magazine *Performance, The Story of the Handicapped,* would like to read it and we wonder if you will give us permission to reprint it, in a forthcoming issue.

A. Price
President's Committee on National Employ the Physically Handicapped Week
Washington

• *Permission granted.—ED.*



Link-Belt's closer heat-treat control—coupled with rigid testing and thorough inspection—is your assurance of uniformity.

Closer heat treat control means longer roller chain life!

But it's only one of many engineering extras you get from LINK-BELT

THE long-life record of Link-Belt Precision Steel Roller Chain is based on more than closer heat treat control. Consider such extra-wear features as shot-peened rollers and lock-type bushings. They're further assurance of Link-Belt's *built-in* extra life.

Link-Belt Roller Chain is available in single or multiple widths, ⅜″ through 3″ pitch. Double pitch, 1″ through 3″. For all the facts, call the Link-Belt office or distributor near you today, or write for Data Book No. 2457.

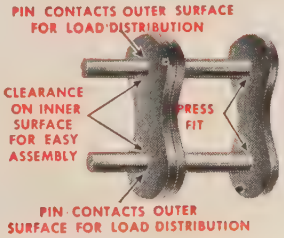
LINK-BELT

ROLLER CHAIN & SPROCKETS

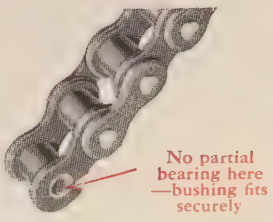
LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13,120-A

Don't overlook these other LINK-BELT extras

Shot-peened rollers have extra fatigue life for higher speeds, heavier loads.


PIN CONTACTS OUTER SURFACE FOR LOAD DISTRIBUTION
CLEARANCE ON INNER SURFACE FOR EASY ASSEMBLY
PRESS FIT
PIN CONTACTS OUTER SURFACE FOR LOAD DISTRIBUTION

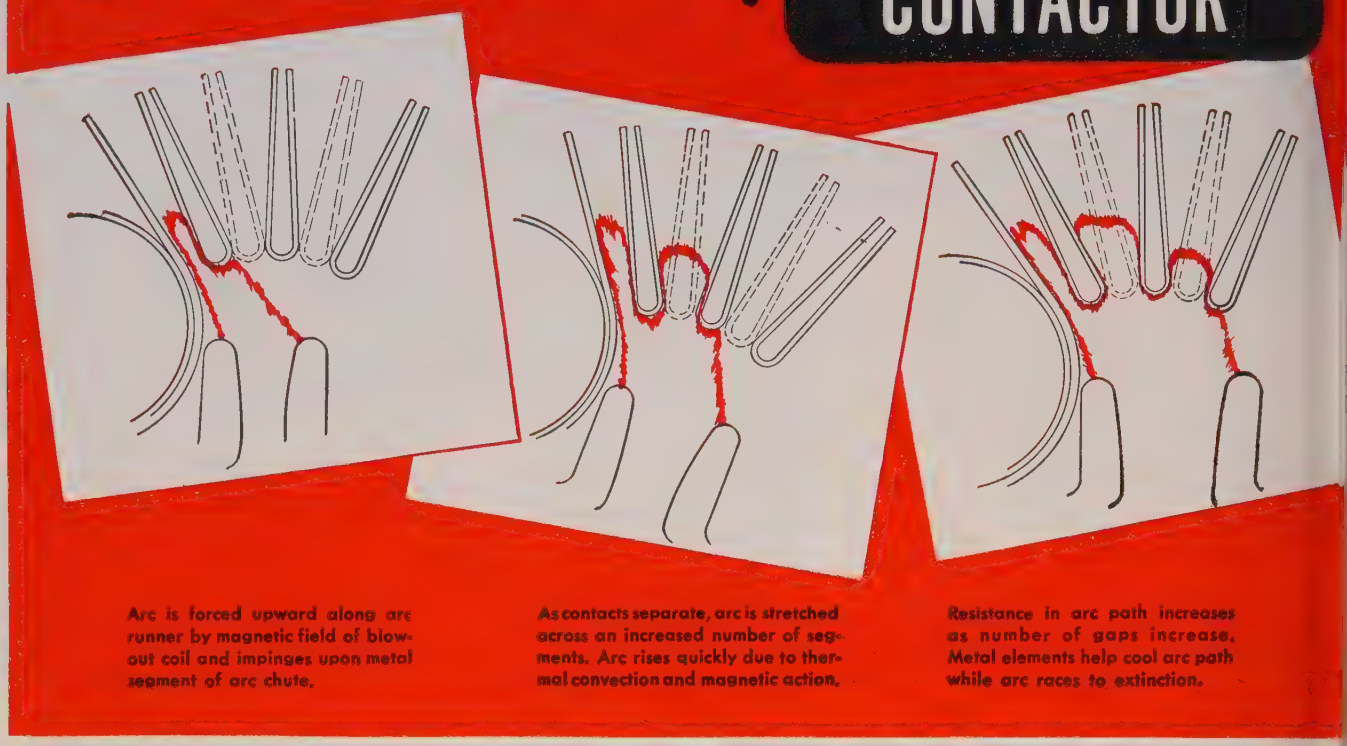
Couple, uncouple multiple-width chains easily.



Lock-type bushings assure free articulation.

trace the arc...

ALLIS-CHALMERS Mill Type 260 DC CONTACTOR

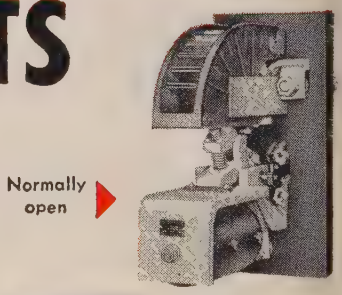


Arc is forced upward along arc runner by magnetic field of blowout coil and impinges upon metal segment of arc chute.

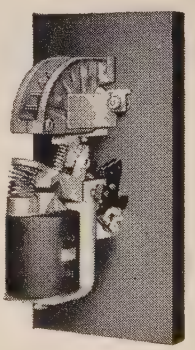
As contacts separate, arc is stretched across an increased number of segments. Arc rises quickly due to thermal convection and magnetic action.

Resistance in arc path increases as number of gaps increase. Metal elements help cool arc path while arc races to extinction.

QUICK QUENCHING CUTS CONTACT BURNING



Normally open



Normally closed

IN THE TYPE 260 heavy duty mill contactor, destructive burning and pitting of contacts is minimized by a new quick-quenching arc centering blowout. U-shaped metal segments mounted alternately in the arc chute act as individual blowout coils. As the arc strikes the loop of each segment, a magnetic field is established which forces the arc upward and toward the center of the chute.

Both thermal convection and magnetic action stretch, cut and cool the arc. Because the arc is extinguished in a cycle or less (on a 60-cycle basis) and is centered in the chute, contact life is greatly extended. Call your nearby Allis-Chalmers District Office or write Allis-Chalmers, Milwaukee 1, Wis. Ask for Bulletin 14B6505A.

A-4017

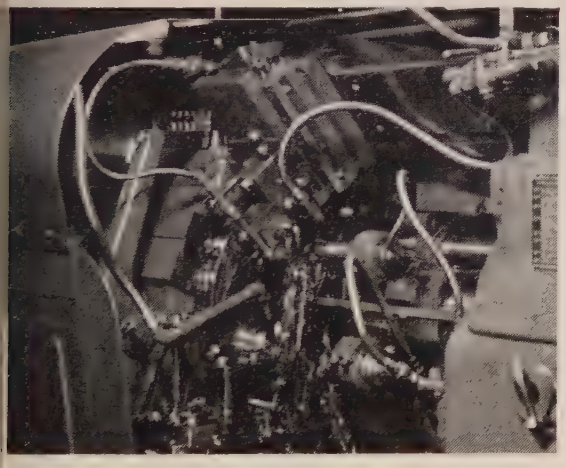
ALLIS-CHALMERS

THREE RATINGS IN BOTH TYPE

Type 260 dc contactors cover virtually eve steel mill auxiliary need. Both normally op and normally closed types are rated 150, 3 and 600 amp at 600 volts maximum.

Free-Machining ENDURO STAINLESS STEEL BARS

...two Grades Fully 90% As Machinable As Bessemer Screw Stock



You can give duplicate steel parts added strength and increased corrosion-resistance . . . and still get economical automatic production. Convert to Free-Machining ENDURO Stainless Steel bars. They're cold-finished by Republic's Union Drawn Steel Division to give you close tolerance, accuracy of section, uniform soundness and fine surface finish . . . plus the high physical and chemical properties of stainless steel. Two grades are fully 90% as machinable as regular Bessemer screw stock. Free-Machining ENDURO is also available in hot-rolled bars and wire. Republic metallurgists give prompt assistance on applications, processing and use. Write:

REPUBLIC STEEL CORPORATION
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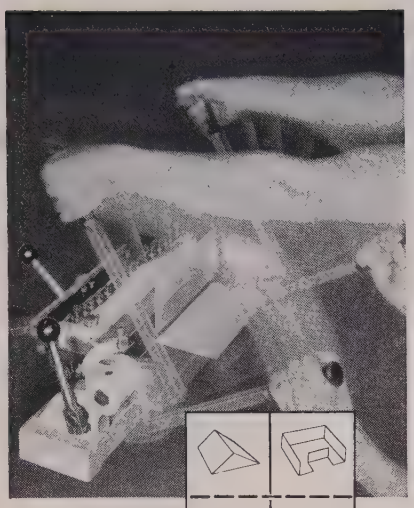
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

Republic ENDURO® FREE-MACHINING STAINLESS STEEL

REPUBLIC STEEL

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



a 4 in 1

metal working tool!

di-acro BOX FINGER BRAKE*

Accurately, Easily, Quickly Form and Duplicate a Wide Variety of Shapes in Metal as Heavy as 16 Gauge—Widths up to 24" —with Versatile Di-Acro Brakes.

A number of forming jobs can be done with the Di-Acro Box Finger Brake, by simply adjusting or changing the type of mounting bar on the contact surface. Di-Acro Finger Brake is:

- **Box and Pan Brake** — when equipped with a complete set of Box Fingers.
- **Open End Brake**—when Open End Finger is installed in place of Box Fingers.
- **Bar Folder** — when an Acute Angle Bar replaces the Box Finger Bar mounting.
- **Standard Brake** — when a Forming Bar is mounted for heavy operations.

Di-Acro Standard and Radius Brakes are also available. Ten models in all.

*pronounced Die-ack-ro

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Send for New 32-Page Catalog

Gives facts on Di-Acro Brakes and also both hand and power operated Di-Acro Benders, Notchers, Punch Presses, Rod Parters, Rollers and Shears. Mail your request today.

Creators of "Die-Less Duplicating"

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304 Eighth Ave.
Lake City, Minn.

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The Weekly Magazine of Metalworking

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(ANSWER NUMBER 1)

NEW METALS FOR AN ATOMIC AGE

"PIONEERS OF THE *UNCOMMON*" IN METALLURGY

For 64 years we have been pioneering in the research, development and production of special purpose steels and, more recently, powdered metals.

Not content to become just another tonnage producer of established grades, Firth Sterling has successfully paced the field in *anticipating* the requirements of science and industry, so that the exactly *right* metal is *ready* when a new need arises.

Now, in an era of jet engines and atomic power, Firth Sterling *has* the necessary high temperature alloys and cermets, Firth heavy metal, chromium carbides, zirconium alloys, and stainless specialties . . . as well as both new and conventional grades of high speed steels, tool and die steels, and sintered tungsten carbides.

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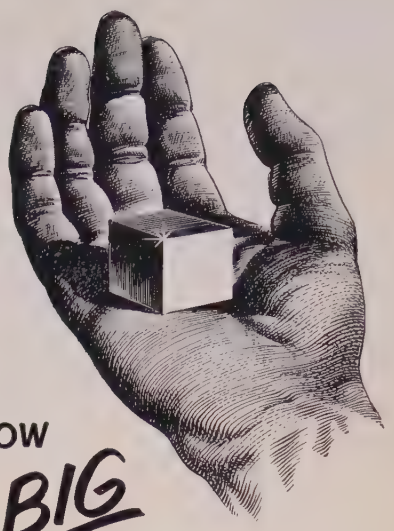
The job is done, for today, yet *even* today we are already working on the metallurgical needs of tomorrow.

Your inquiries are invited.

Firth Sterling Stands for Metallurgical Achievement—Past, Present, Future



HOW *BIG* IS A POUND?

That depends! To a woman, perhaps the size of a print of butter. To a grocer, maybe the size of a box of sugar.

To a Firth Sterling metallurgist, something else!

To him it might mean the size of a piece of remarkable new metal, so dense, so heavy in relation to its bulk, that a pound of it would measure hardly more than a *one inch cube!* Looking for all the world like steel but weighing 2½ *times* as much . . . that is Firth Heavy Metal.

Developed originally and now being used to shield the gamma rays of atomic energy, the phenomenal weight to volume ratio of this material also makes it invaluable in gyroscopic applications and for scientific instruments where balance is essential.

But, while Heavy Metal is important of itself, its larger significance is to mark, once again, Firth Sterling's continuing progress in the field of metallurgical achievement through accent on research and development. The ultimate goal is *leadership* in products and processes that meet the ever increasing demands for special metals in an atomic age.

P-5

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High Speed Steels
Tool & Die Steels
Stainless Specialties
High Temperature Alloys
Sintered Tungsten Carbides
Firth Heavy Metal
Chromium Carbides
High Temperature Cermets

problem... ..HOW TO CUT STEEL COSTS

Both systems begin with mill coil. However, if you are now buying sheet you are faced with the following costs.

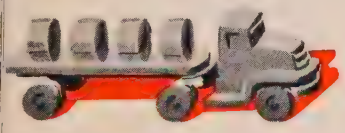
For mill cutting to random lengths, simply shearing to reach sheet form, add **$.10** per hundred weight to basic steel cost.

For squaring to tolerance at the mill add another **10 per-cent** to your basic steel costs.

Then for wrapping ... palletizing to keep the sh... clean and easy to w... house **add an additio... $.025** to the costs.

The steel, of course, must ... delivered regardless ... form.

solution... ..A WEAN SLITTING and SHEAR...



With the Wean system you buy coils, simply prepared . . . eliminate mill extras. Delivery is of comparatively few width sizes.

The fewer sizes . . . the smaller purchasing and inventory staffs required.

And you save approximately 30 percent in storage area.

The Wean Line converts ... coil of steel to resquc... multiples at rates up to ... feet (or 100 cuts) ... minute. Tolerance cond... is easily held within accep...

Actual Savings in Steel Costs of 20%

To many steel fabricating people this amazing speed of cutting ... length to resquared tolerances has seemed unbelievable. But ... many others, who have seen one of these Wean lines in operation ... talked with people who operate them, gone over actual figures ... this is a production line "must".

When we say savings up to 20 percent in your steel costs we ... mean just that. Total up the costs approximated above . . . check them against the book . . . against your own cost sheets. Find out what you're paying for getting steel from coil to final sheet size, ready to form. If it's more than a dime a hundred weight then you should know all about the Wean line. Get in touch with one of the offices listed below and let a qualified Wean representative work with you — using your figures if you wish — in proving the Wean line can effect a substantial savings where you and your operations are concerned.

here you're buying sheets
various sizes you'll re-
ire about **30 percent**
ore help in your purchas-
and inventory control
partments.

And about **30 percent more space** in your warehousing set-up.

Then, if you further resquare to multiples in your own plant you're paying **an additional cost of at least $.35 per hundred weight.**

Thus, prior to fabrication, you have added approximately $1.00 to every hundred pounds of steel, even though you are using plain light gauge metal.

IE

range. The entire "extra" cost prior to fabrication here . . . just a fraction of the $1.00 plus per hundred weight cost of standard methods.

Wean

COMBINATION SLITTING and SHEARING SYSTEMS

WEAN EQUIPMENT CORPORATION OFFICES

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GIANT OF THEM ALL...

for one of America's Largest Presses

MIDVALE PRODUCES 672,000 POUND INGOT FOR NEW AIRCRAFT PRESS

Presses with up to 50,000 ton capacity capable of forming a nearly finished wing section of an airplane—these are the goals of America's planemakers.

First in this program are the huge presses and this giant Midvale ingot is the initial part supplied to the press manufacturer. Cast in Midvale's open hearth furnaces this steel ingot measured 116 inches in diameter and was more than 24 feet high. Midvale craftsmen cast, forged, heat treated and machined this huge part to exact specifications.

Whatever your needs—parts to finished products—Midvale can assure you of precision production. Whether it is roll shells for the mining and cement industries . . . pressure vessels for the chemical and petroleum industries . . . rolls for the paper or steel industry . . . rings for turbines and gears . . . or castings and forgings for any industry . . . Midvale can make them to your most exacting requirements.

- Pressure Vessels
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- Ordnance and Armor

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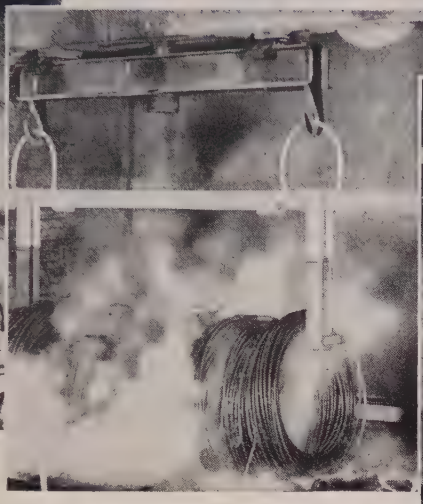
MIDVALE

Custom Steel Makers to Industry

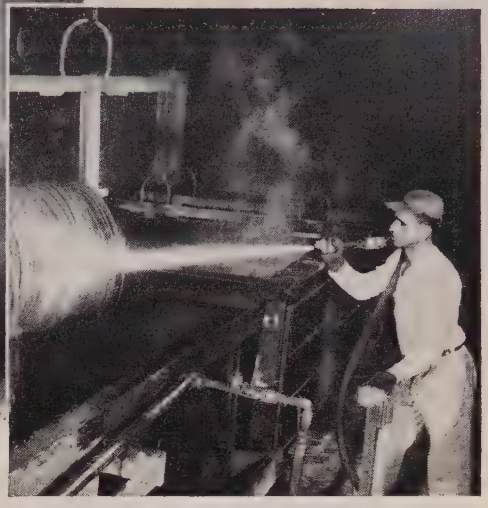
PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

Over 5 tons of carbon steel wire thoroughly descaled within one hour!

A yoke of 5/32" dia. wire is lifted from the hydride tank. (Up to 3 yokes can be treated at one time in this tank. Working dimensions are 7' x 8' x 5' 6".)



Water quench blasts off loosened scale.



Thorough descaling complete with final rinse.

DU PONT SODIUM HYDRIDE DESCALING PROCESS

By switching to Du Pont's efficient and simplified process, a large eastern steel manufacturer was able to triple descaling capacity—with *less than half* the man power!

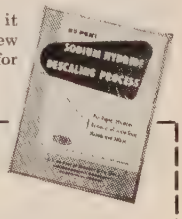
These and other important savings are possible with Sodium Hydride Descaling because elaborate scale breaking operations are eliminated entirely, yet uniform descaling is accomplished in the shortest possible time—no retreatments needed! And because dissimilar metals can be effectively treated in the same bath, this steel mill finds the Du Pont process ideal for descaling their quality carbon and stainless steel products indiscriminately at production line speeds.

Costly rejects due to pitting or loss of gauge are avoided . . . there's never any danger of base metal attack no matter how long the work remains in the sodium hydride bath! Dimensional accuracy is maintained, and subsequent drawing operations can be carried out to closer tolerances. Die life, too, is increased.

Find out how Du Pont's Sodium Hydride Process can improve your descaling operations. Just get in touch with our nearest district office or send in the coupon below.

DISTRICT AND SALES OFFICES: Baltimore • Boston • Charlotte • Chicago Cincinnati • Cleveland • Detroit • Kansas City* • Los Angeles • New York Philadelphia • Pittsburgh • San Francisco. *Barada & Page, Inc.

More detailed information about the process—how it works, what it can do for you—can be found in our new book. Call our nearest office or use the coupon below for your copy.



DU PONT
Sodium hydride process for positive descaling

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department 3-022
Wilmington 98, Delaware

Please send me more information about the Du Pont Sodium Hydride Descaling Process: advantages, applications, equipment used. I am interested in descaling_____

_____

*Name*_____ *Position*_____

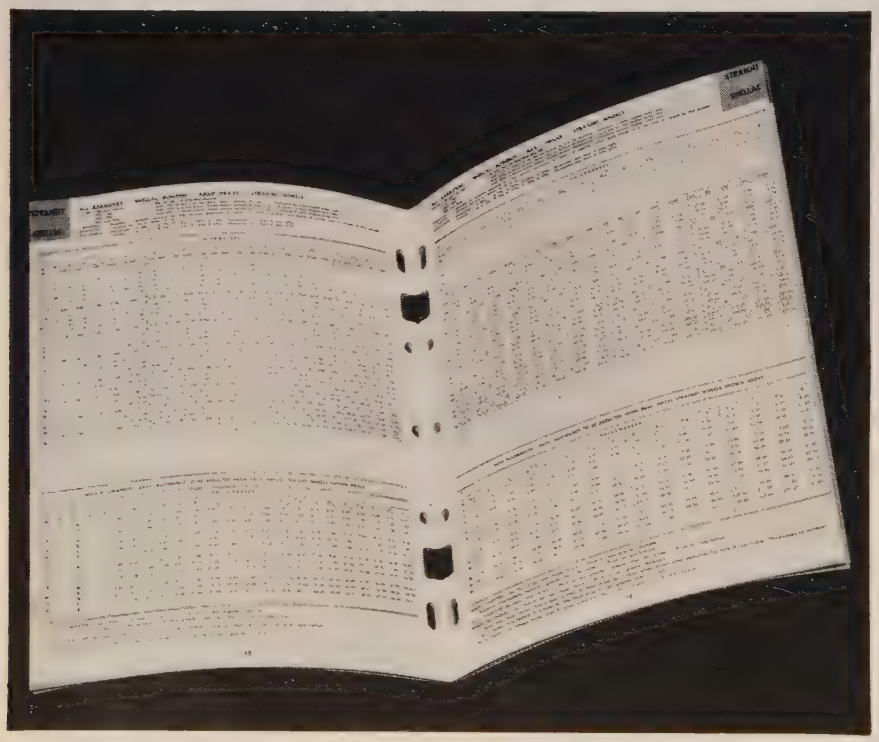
*Firm*_____

*Address*_____

*City*_____ *State*_____

FIRST SIMPLIFIED PRICING IN GRINDING WHEEL HISTORY

CARBORUNDUM's New "Quick-Finding" Reference Replaces Traditional Complex Time-Wasting System



114 Page Pricing System Now Simplified to 32 Pages

CARBORUNDUM has achieved *simplification* with this new basic pricing system: previous information requiring 114 pages covering list prices, discounts, etc., has been reduced to only 32 pages.

You can now order your grinding wheels from CARBORUNDUM with a speed and accuracy hitherto impossible. Practically everything you want to know about prices, ordering quantities, discounts on any one wheel will be found on one page—arranged for quick, easy finding.

CARBORUNDUM® has taken the mystery out of buying industrial grinding wheels...by adopting the first really simplified basic price system in the history of the industry. Now you can determine prices, ordering quantities and discounts for a given wheel, almost without exception, by checking a single page of this new book.

You no longer have to refer to several pages to determine prices and discounts, nor follow complicated rules, nor apply chain discounts, nor worry about decimal multipliers. Even the special price additions covering various shapes have been eliminated. Basic prices are shown for all straight wheels *and* special wheels such as dishes, saucers, flaring cups, special faces, cones, plugs, and many others.

Practically all the wheels you use can be priced with a single discount under this new system, thus further simplifying your paper work and minimizing errors.

Coincidental with the adoption of this basic pricing system, some price adjustments have been made. Prices of certain lines of wheels are reduced, others are slightly higher.

"A Boon to Every Customer and To Us," is Distributor Concensus

First copies of this new pricing system off the press went to several hundred Industrial Distributors of CARBORUNDUM's grinding wheel lines. The many letters of response have been highly enthusiastic. Here are typical comments:

"This is, without a doubt, the finest simplified pricing system I have ever seen. We want to compliment you on this progressive step."

"Heartiest congratulations—the new net pricing schedules are swell! It would do your heart good to see the gratitude with which these prices were received by the boys in our organization. I feel that you men who devoted so much time to getting out this pricing structure should know how we feel. This is a real contribution to Industrial Distributors—and to industrial purchasing agents."

"Next to standardization of gradings, your new price book is probably the most progressive step that has been taken in simplifying the marketing of abrasives. With this new basic pricing plan practically all the complications have been removed. We know it will have enthusiastic reception."

"Carborundum has taken a forward step that should pay off in the future. After trying a few examples in pricing, it looks as though price clerks and purchasing people will have a much easier time arriving at net prices than heretofore."

The success of this new simplified pricing plan was foreordained, because twelve of the nation's top industrial supply men helped put the system together. This group, known as CARBORUNDUM's *Distributor Advisory Board, was of material assistance to* CARBORUNDUM's *sales management on this key project.*

HOW IT SAVES TIME...Cuts Errors

Reducing the number of pricing pages from 114 to 32 gives you only part of the picture of how CARBORUNDUM's new system speeds and simplifies the pricing of grinding wheels. It actually cuts down the number of steps required to compute a price—and best of all, it concentrates those steps within the confines of a single page.

As an example, consider the steps—and separate page references—previously required to find the price of cup wheels: 1) Look up the page showing the list price... 2) Look up the page showing list price additions... 3) Look up the page showing the standard ordering quantity schedule, to determine quantity for discounting purposes ...4) Look up the page showing product discount... 5) Look up the page showing quantity discount.

All this information, previously appearing in five different places in the price schedule, is now found on a single ready-reference page. No wonder pricing now takes far less time, with far fewer chances for error.

For when you have to flip pages back and forth, sometimes losing your place, often doing involved calculations, not only do you waste valuable time, but errors are bound to creep in—errors that are even more costly than the high cost of lost time. This new simplified "all-on-one-page" system was designed to be error-proof; thorough tests by grinding wheel users prove that it actually promotes a high degree of accuracy—thus makes doubly valuable the savings in time it gives you.

Simplified Pricing to be Extended to Other Abrasive Lines

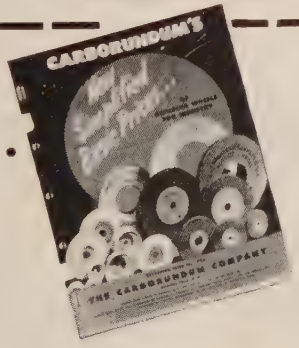
The new basic pricing system will soon be applied to additional abrasive lines by CARBORUNDUM. Segments, Disc Wheels, Mounted Wheels and Points, "MX" Wheels, and other bonded products will shortly be covered by new simplified basic price lists.

THE CARBORUNDUM COMPANY

REGISTERED TRADE MARK

Your copy is waiting for you...

MAIL COUPON NOW...TODAY!



THE CARBORUNDUM COMPANY, Dept. S 81-317
Niagara Falls, New York

Please send me my copy of "New Simplified Basic Prices of Grinding Wheels."

NAME

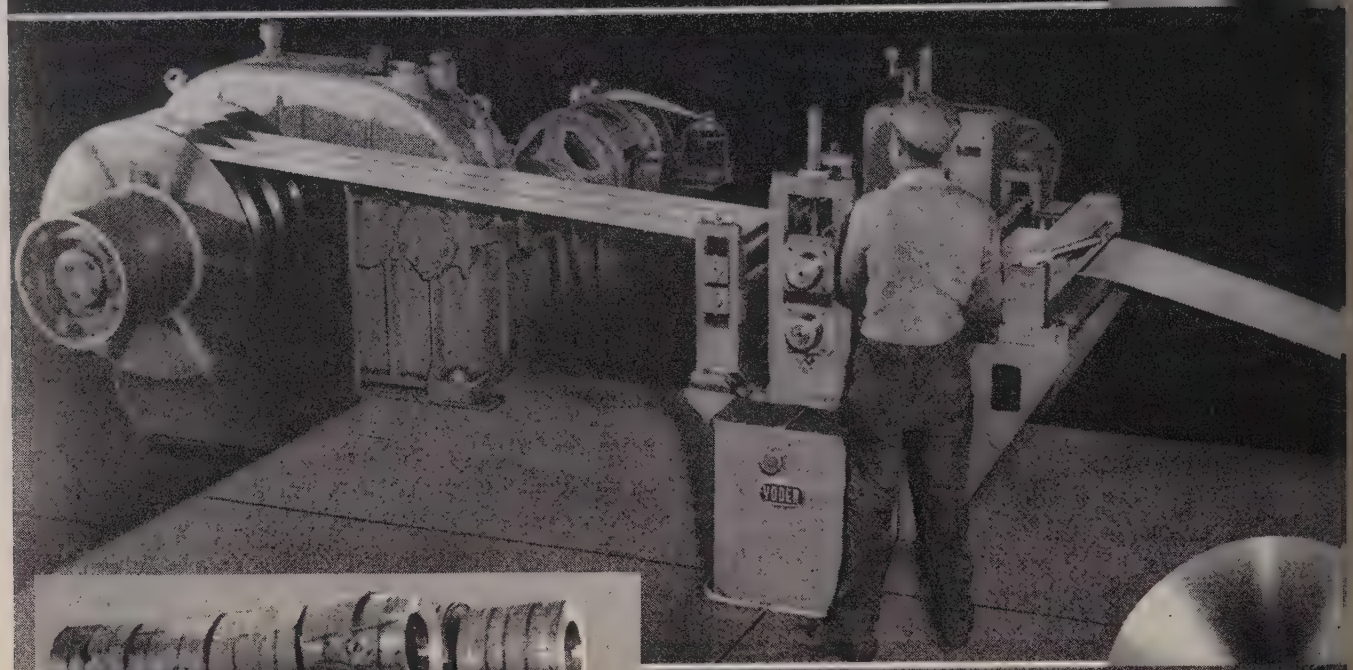
COMPANY

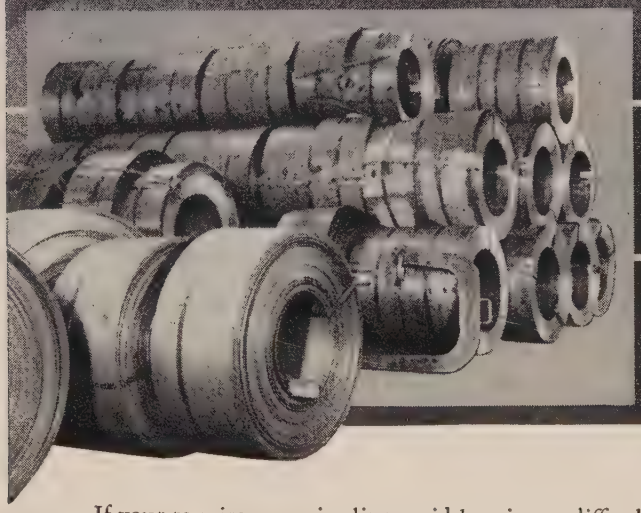
STREET AND NUMBER

CITY ZONE STATE

81-317

Double-Quick Slitting Service





Speeds Production

Simplifies Planning
Lowers Cost

If your requirements in slit-to-width strip are difficult to anticipate weeks or months in advance; if deliveries are slow and uncertain; if sources of slit strip supply are limited—a Yoder slitter may be the perfect answer to all these handicaps.

Aside from the great CONVENIENCE of being able to supply, on a few hours notice, your own needs in slit-to-width strip, from a relative small stock of standard-width coils, the *economies* effected are surprisingly great: First, by a substantial reduction in the price per ton; secondly, by elimination of idle time while waiting for deliveries of slit strip.

Your tonnage requirements, therefore, *need be no more than 100 tons per month (for narrow strands, much less) in order to make the slitter an exceedingly profitable investment.*

Yoder slitters and accessories are made in all sizes and types, for sheets as well as coils, small and large; narrow as well as wide strands; all gauges.

The Yoder Slitter Book is a practical treatise on the economics and mechanics of slitter operation. Send for it.

THE YODER COMPANY • 5502 Walworth Avenue, Cleveland 2, Ohio

Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding

ENGINEERING YODER MANUFACTURING

How Oxygen...and LINDE SERVICE*

SAVE TIME AND MONEY

CONDITIONING STEEL —150 TIMES FASTER!

LIN-DE-SURFACER SCARFING MACHINES use oxygen and acetylene to remove scale and surface defects from steel right on the roll line. This outstanding LINDE development conditions steel up to 150 times faster than manual methods.

LINDE Oxygen Customers get the advantage of...

LINDE'S MANY PLANTS, strategically located to assure a dependable supply, meet every demand. No oxygen failure due to failure of a single plant.

LINDE'S DRIOX and CASCADE Oxygen Systems, which have no fixed capacities. Even under widely fluctuating demands, your supply is determined by your needs. You pay only for what you use.

LINDE'S FIELD ENGINEERS, who work on oxygen users' problems —help them find new and better ways to get the most economy and efficiency from their use of LINDE oxygen.

LINDE'S LABORATORIES, which are constantly working on new and improved applications for oxygen. Many of today's oxygen-using methods and machines are the result of LINDE research and development.

AND * LINDE SERVICE

which is the unique combination of all of the research, engineering, and over 40 years of accumulated know-how that is helping LINDE customers save money and improve production in their uses of oxygen and oxy-acetylene processes.

If your company uses oxygen, LINDE SERVICE *can mean dollar savings to you. Let us tell you more about it.*

LINDE AIR PRODUCTS COMPANY

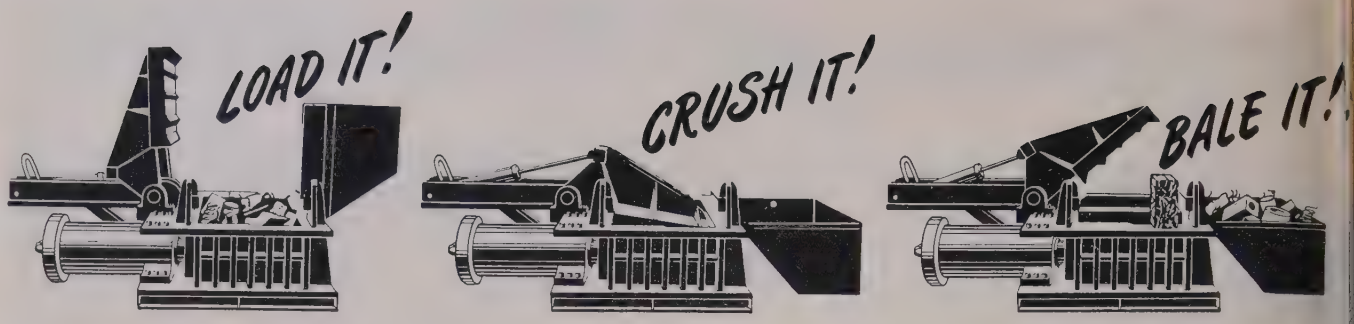
A Division of UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street New York 17, N. Y.

Offices in Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

Linde Trade-Mark



We Build the Dempster-Balester to Load It, Crush It, Bale It— Bale After Bale After Bale!

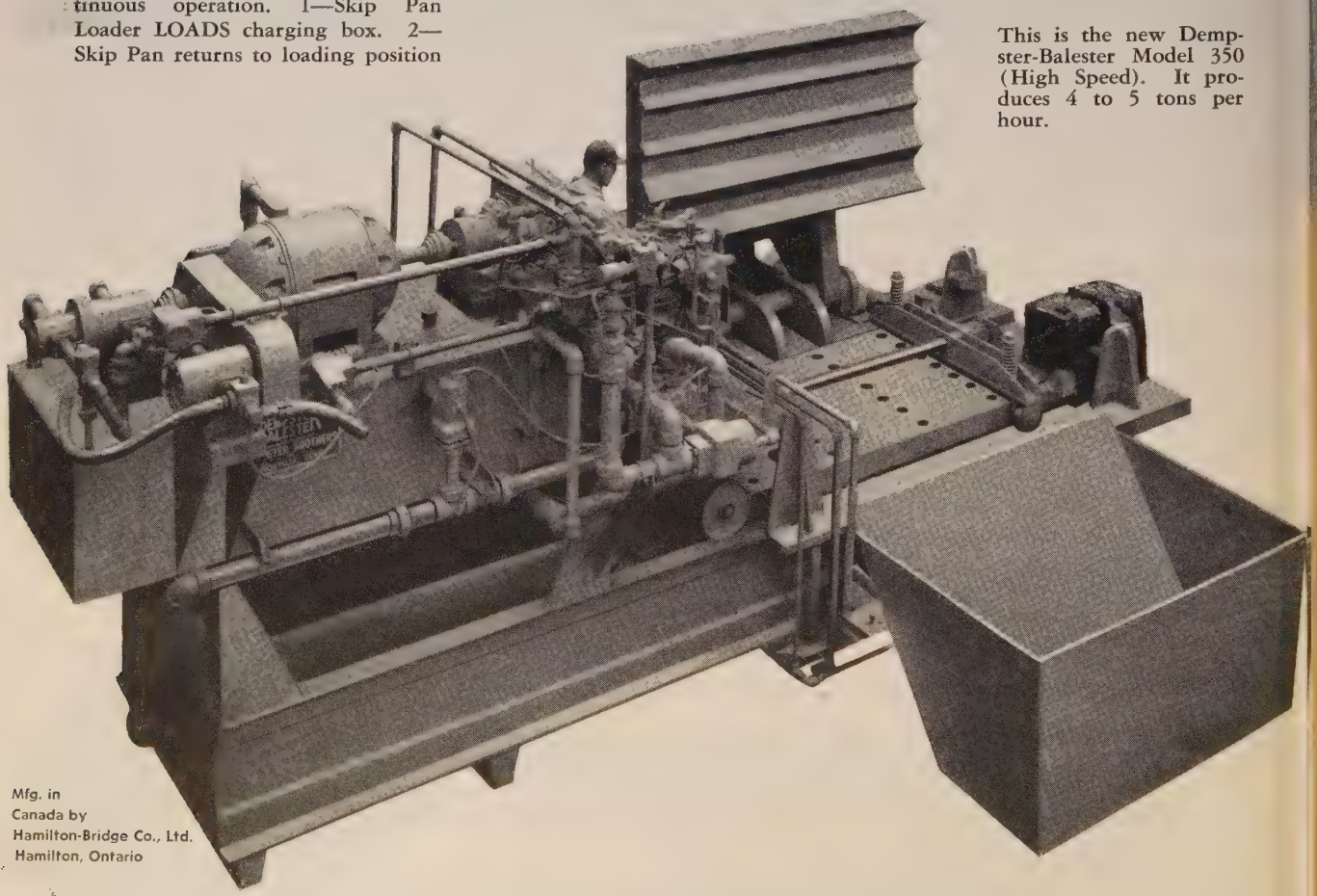
You not only get the nearest thing available to automatic baling when you buy a Dempster-Balester, but you get a press built to take the punishment of scrap metal baling consistently day-in and day-out . . . bale-after-bale-after-bale! The first Dempster-Balester was built in 1940 and it is still in operation. Today, hundreds of Dempster-Balesters are making money for men like yourself in over 200 cities in almost every state of the union, plus 15 foreign countries.

The Dempster-Balester's LOAD IT, CRUSH IT, BALE IT cycle (illustrated above) is a simple 1-2-3 continuous operation. 1—Skip Pan Loader LOADS charging box. 2—Skip Pan returns to loading position and Auxiliary Compression Door CRUSHES scrap with a 45-ton force. 3—As Compression Door returns to up-right position, charging box door closes . . . scrap is BALED and ejected. As each cycle ends another begins.

Without question, Dempster-Balesters are the fastest, most efficient presses baling scrap metal today! And you have six to choose from—three standard and three high speed models that turn out high density bales in capacities to meet any requirement from 1 to 9 tons per hour.

And don't overlook this important point. Before buying a baling press, it's important to know what kind of service you can expect. Certainly, no piece of heavy machinery can operate consistently without maintenance. Breakdowns cost money and when a part is needed for one of our presses, it is usually shipped the day your order is received. An ample stock of repair parts is constantly maintained to take care of you promptly! Write to us today for complete information.

A product of Dempster Brothers, Inc.

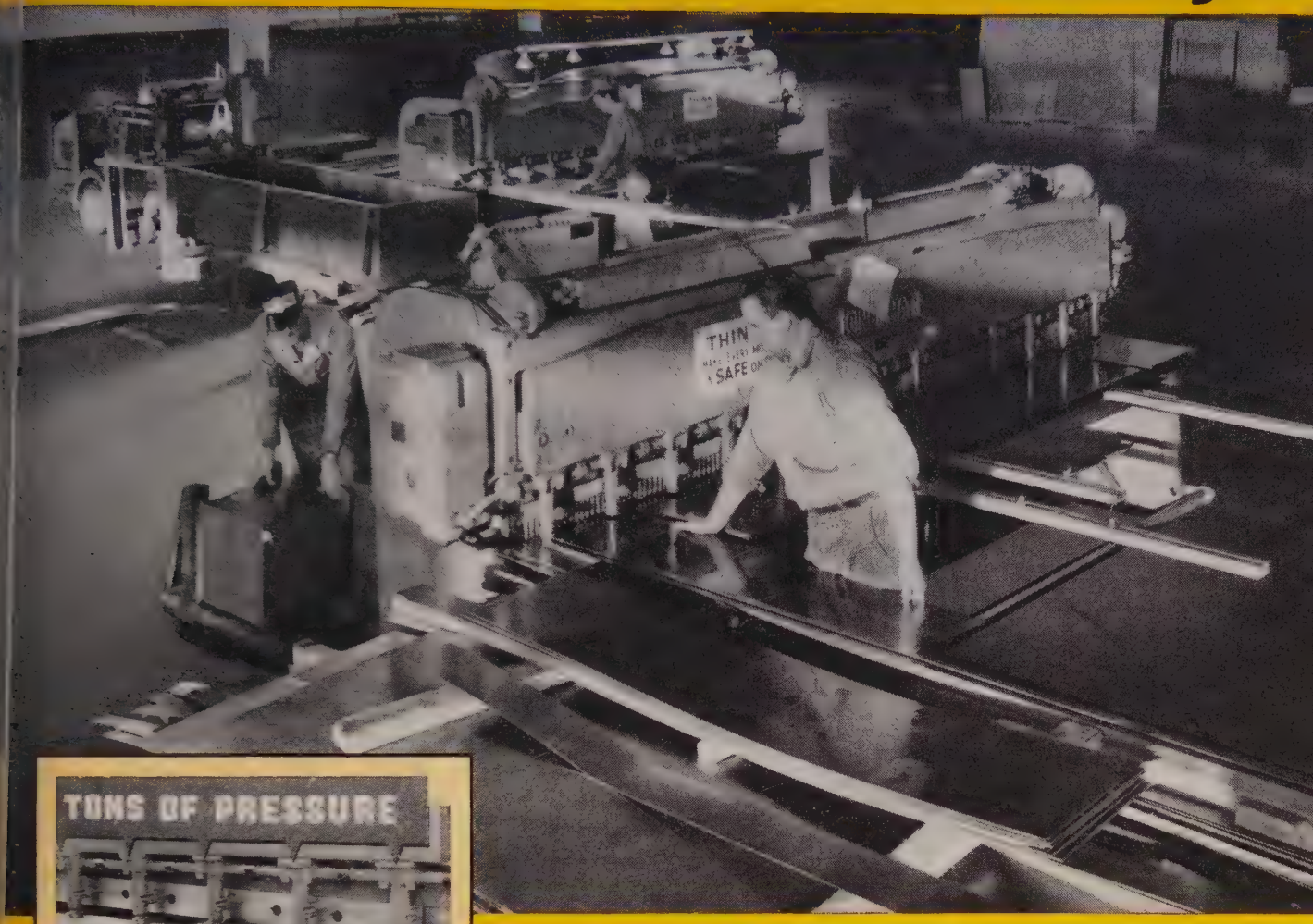


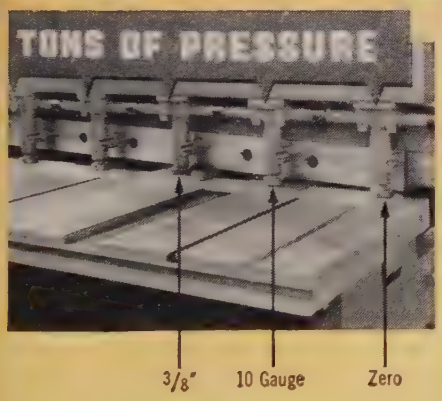
This is the new Dempster-Balester Model 350 (High Speed). It produces 4 to 5 tons per hour.

Mfg. in Canada by Hamilton-Bridge Co., Ltd. Hamilton, Ontario

DEMPSTER BROTHERS, 863 Shea Building, Knoxville 17, Tennessee

ACCURACY is necessary





Micrometer accuracy starts with Cincinnati Hydraulic Holddowns. They exert tons of pressure and automatically hold all thicknesses of work securely.

...AND THE SPEED AND VERSATILITY OF CINCINNATI SHEARS IS NEEDED, TOO

Here at The W. J. Holliday Company, Inc., The Department Store of Steel—these busy Cincinnati Shears operating continuously, shear accurate blanks to customer size.

They handle cold finished, or pickled and oiled sheets up to 10 gauge and hot rolled sheets up to ¼". Both management and operators are enthusiastic about their Cincinnati Shears.

Write for Shear Catalog S-6.

Photos courtesy The W. J. Holliday Company, Inc., Indianapolis, Indiana

THE CINCINNATI SHAPER CO.

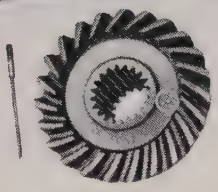
CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

CINCINNATI

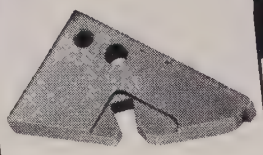
METAL DISINTEGRATION

and what it can do for you . . .

Remove Broken Taps fast without distortion

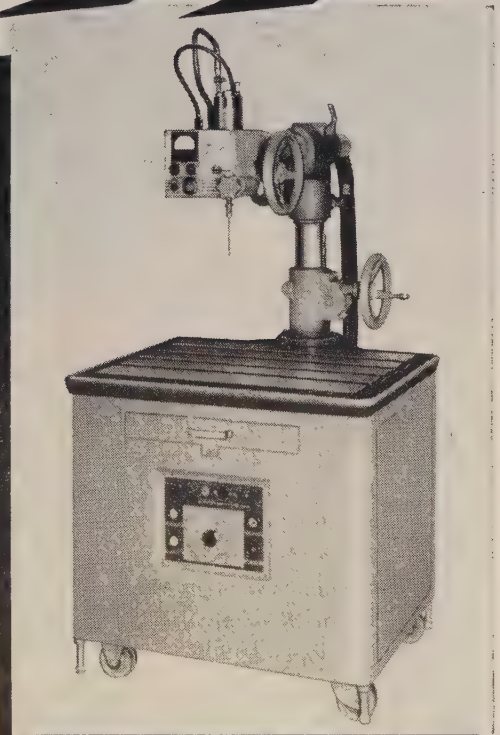


Cut oil holes in hardened gears without annealing



Cut dovetails in hardened dies

Cut any shape hole in cemented carbides



Literally hundreds of thousands of dollars are saved annually by corporations that are using Metalmasters in just tool and die repair alone.

There's a technical engineer in your area to give you an on-the-spot demonstration in your own plant at your convenience. (NOTE: It is not uncommon to pay for a Metalmaster with just one short demonstration thru savings on workpieces.)

For information as to the Metalmasters' uses and benefits merely write today on your company letterhead to:

Metalmaster

DIVISION OF CLINTON MACHINE COMPANY

CLINTON, MICHIGAN

puzzled about handling costs?

then consult **BROWNHOIST**

Railroads, steel mills, mines, docks and large manufacturing plants can cut costs and speed materials handling with BROWNHOIST equipment. BROWNHOIST builds boat unloaders, fast plants, traveling bridge cranes, storage bridges, shipyard cranes, car dumpers, locomotive cranes and related machinery to handle bulk materials in large quantities rapidly and efficiently. The traveling ore bridge shown here, for example, can unload and stockpile approximately 600 tons of iron ore per hour.

BROWNHOIST equipment is built in capacities to meet virtually every bulk materials handling requirement. If you want to save production time and money, it will pay you to consult your nearest BROWNHOIST representative or write us today for complete information.

is Traveling Ore Bridge ped one large manufactur- cut the cost of unloading pments of ore from Great kes' vessels. It has a span 234 ft., a raisable apron ending 88 ft. from the cen- of the pier leg and a fixed ntilever 55 ft. on the shear d. It is equipped with own patent ore buckets.

170

BROWNHOIST
builds better cranes

CLAMSHELL BUCKET

250 TON WRECKING CRANE

COAL-ORE BRIDGE

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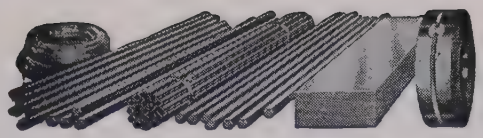
INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago; Montreal, Quebec • AGENCIES: Detroit, Birmingham, Houston, Los Angeles.

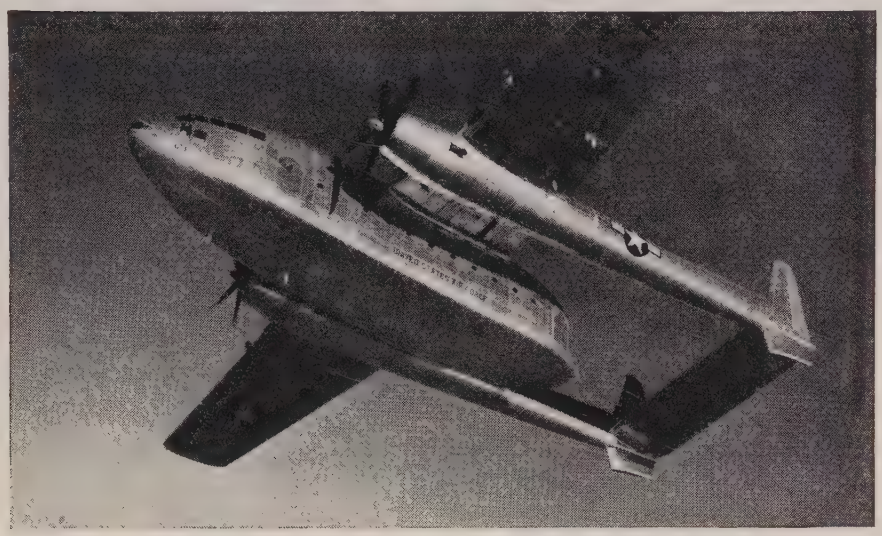


BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport BRASS CO. MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL

Rugged Duronze Fittings Chosen for Flying Boxcars



Fairchild C-119 Flying Boxcar, standard medium USAF transport.

Bridgeport's Duronze III is playing an important role in the manufacture of Fairchild C-119 Flying Boxcars. Items such as bulldozers, trucks, 155 millimeter howitzers, jeeps, lifeboats, helicopters, ambulances and steamrollers fit easily into the cavernous holds of these twin-boomed aerial carryalls. Rugged construction is necessary, because the C-119 must deliver sustained high performance under severe conditions.

Advantages of Duronze III

Searching for a tough, hard metal for bushings, screws, nuts and other fittings, the Fairchild engineering department decided on Bridgeport's Duronze III, silicon aluminum bronze, 707. It contains approximately 91% copper, 7% aluminum, and 2% silicon. This engineering alloy was chosen in preference to other metals because of its unusually fine physical properties:

- ...the remarkably high tensile strength of approximately 90,000 psi and a Rockwell hardness of B85 in the annealed condition.
- ...excellent resistance to corrosion.
- ...about 9% lighter than Naval brass.
- ...free machining—60% rating as compared with free cutting brass.

This hard, strong alloy has fine wear resistance when used for sliding parts. It can readily be hot forged at a temperature slightly higher than that used for brass.

Duronze III Parts Used in Flying Boxcars

The illustration below shows the following parts:

(1), (3) Nuts used on engine control panel.

(2) Split bushing for nose landing gear trunnion support.

(4) Bushing used in nacelle and fuselage.

(5) Bushing for emergency escape hatch block assembly handle.

(6) Support collar used on leveling jacks on ground handling equipment.

(7) Threaded collar for leveling jacks on ground handling equipment.

(8) Bushing for engine control pedestal.

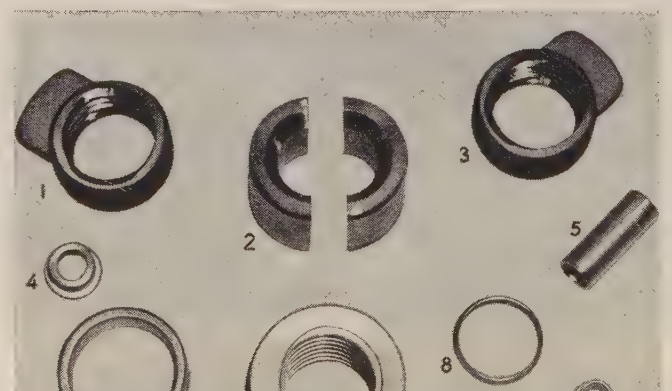
(9) Bushing for fuselage floor roller.

(10) Bushing for nacelle door actuator push rod.

(11) Bushing for master cylinder brake system (covered with glue to prevent threads being scratched until installed).

(12) Bushing for life raft release load reducer.

Not illustrated are Duronze III trunnions of throttle stop mechanisms which are installed on engine control pedestals.



Parts used in manufacture of Fairchild C-119 Flying Boxcars made from Bridgeport's Duronze III. Courtesy Fairchild Aircraft Division, Hagerstown, Maryland.

Technical Assistance

If you are planning to upgrade the quality of your products by changing your metal specifications, contact our nearest district office for technical assistance. We will be glad to supply information on Duronze III—physical properties recommended, machining methods and suggested applications. Write for your free copy of Bridgeport's "Duronze Manual" today—on company stationery please. (18)

AUSES OF CORROSION

is article is one of a series of discussions by L. Bulow, corrosion metallurgist of the idgeport Brass Company.

OPPER ALLOYS vs. SODIUM BICARBONATE SOLUTIONS

In the preceding issue of this column we showed that the passage of rbon dioxide through sodium hyoxide converts the hydroxide to carnate and that the resulting solution odium carbonate) tends to be less rrosive towards copper and copper oys.

The passage of even larger quanies of carbon dioxide through the lution results in the formation of dium bicarbonate:

$$H_2CO_3 + Na_2CO_3 \rightleftarrows 2\ NaHCO_3$$

$$H_2CO_3 + NaOH \rightarrow NaHCO_3 + H_2O$$

hrough reaction with carbon dioxide e alkalinity of the sodium hydroxide lution is progressively reduced from dium hydroxide to sodium carbonate sodium bicarbonate. For example, e pH of 0.1 N solutions of these mpounds is 13.0, 11.6, and 8.4 reectively.

In water solutions sodium bicarbone is unstable and begins to break up to carbon dioxide and sodium carbnate at room temperature with the eak-up being complete at boiling mperature. This reaction forms the asis of an important process for the mmercial production of carbon dixide gas where carbon dioxide is dislved in the cold carbonate solution nd later liberated by heating. When dium bicarbonate is used as baking da, the same reaction occurs.

In addition, sodium bicarbonate is sed in the manufacture of many dium salts, as a source of carbon dixide, as an ingredient of baking powder, effervescent salts and beverages, re extinguishers, cleaning compounds, tc.

In sodium bicarbonate solution, as h other alkaline solutions, the rate f corrosion of copper and copper lloys slows up due to the formation f a dark bluish-colored protective film f cupric oxide, hydroxide and carbonate. This film results from decomposition of an unstable blue-colored compound which forms adjacent to the surface. In a closed system over a long period of time at room temperature, the concentration of this compound may become high enough (excess of about 200 ppm as copper) to lead to the formation of bright clear transparent blue basic copper carbonate crystals on the surface of those particular copper alloys showing the least corrosion resistance in this solution. The presence of iron corrosion products in the sodium bicarbonate solution lowers the rate of corrosion through the deposition of protective layer of brown iron carbonate on the copper surface, much the same way as calcium carbonate films and scales protect copper and copper alloys exposed to scale-forming fresh waters.

CORROSION OF COPPER ALLOYS IN 0.86 N SODIUM BICARBONATE SOLUTION

Quiet immersion at room temperature (435-day test).

Alloy	*Corrosion rate**
70 Cu, 29.4 Ni, 0.4 Fe	0.00010 ipy
80 Cu, 19 Ni, 0.5 Fe	0.00016 ipy
90 Cu, 9 Ni, 1.0 Fe	0.00016 ipy
76 Cu, 29 Zn, 1.0 Sn, 0.02 As	0.00035 ipy
76 Cu, 22 Zn, 2.0 Al, 0.02 As	0.00050 ipy
94.2 Cu, 5.5 Al, 0.25 As	0.00033 ipy
85 Cu, 15 Zn	0.00021 ipy

**in inches per year based on loss in weight. All specimens covered with a light green film (when air dried).*

The data given in the above table show that under conditions which permit the formation of a protective film on the copper or copper alloy surface, the corrosion resistance of copper alloys is satisfactory for handling sodium bicarbonate solutions.

Where accumulation of copper salts and coloration of the solution may be objectionable, tin coating of the copper alloy has been long practiced.

Under conditions of solution flow against the metal surface or where crevices or flaying surfaces exist in the design which may hinder the formation of the protective film, it is advisable to use those copper alloys having the highest corrosion resistance, thicken the metal in the critical area or change the design and conditions of use so that a protective film can form.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Air Operated Hoist weighing 27½ pounds is said to have 1000-lb. capacity at 40 fpm. Throttle control gives infinite range of lifting speeds. Top and bottom hooks are equipped with safety snaps, chain with adjustable safety stops to limit lift and descent. Brake locks instantly when control is released, air is disconnected or pressure fails. **No. 1306**

Trouble Light Reel with 20′, 25′ or 40′ extension cord is said to operate easily and lock at any length within full extension. Cord is water and oil resistant. Lamp has heavy duty handle, window guard for changing without removal. Available with 360-degree ceiling mounting or 180-degree wall mounting. **No. 1307**

Extension Drilling Chucks for 52 small diameter drills are said to facilitate drilling in hard to get at locations. Extension chucks using regular length drills fit threaded drill extension rod and are quickly interchangeable. Rod measures 8½″ long and fits all ¼″ chucks. **No. 1308**

Pocket Magnifier incorporates own light source in unique lens construction, permitting light to go through lens and on to object without directly reaching user's eye. Uses two penlight batteries for illumination and clips to pocket like fountain pen. Said to be useful for inspecting small parts, joints and welds and for reading fine scales, etc. **No. 1309**

Wet Blasting Machine utilizes fine mesh abrasives suspended in water propelled at work by compressed air. Machine is said to clean and finish small parts without destroying sharp lines, corners or fine tolerances. Set of armholes with gauntlets permits operator to manipulate abrasive gun towards work while operating valve with knee. Work is illuminated by fluorescent lights and viewed through large window. **No. 1310**

Marker and Counter utilize a pencil attached to counting device. When the pencil marks items, an audible click registers each count. After count is taken, a knob resets the machine to zero. **No. 1311**

Floating Reamers are said to maintain accuracy of bore, concentricity and smooth surface. Available for blind or through holes, blades are of high speed steel or carbide tipped, and come in fourteen sizes from ¾ to 4 in. diameters. Hand adjustments are easily made by setting direct-reading micrometer adjustments. Blades are reported sharpenable without losing floating action. **No. 1312**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL
BRIDGEPORT BRASS
BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865
Mills at Bridgeport, Connecticut, and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal
Warehouse Service with Slitting Facilities in Principal Cities
Advertisement

things are humming at Claymont

New, modern equipment—including vertical edger . . . hot shears . . . slabbing furnace . . . annealing furnace . . . are now in full operation producing Claymont Steel Products.

They're enabling us to maintain our traditional quality standards and personalized attention to your needs—while at the same time improving our service to you.

Let us know your requirements.

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New York · Philadelphia
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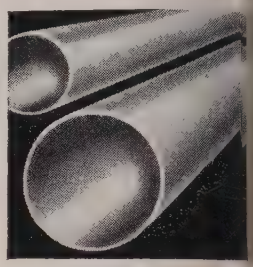
CLAYMONT STEEL PRODUCTS

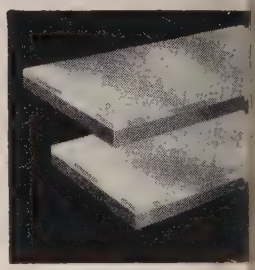
PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

CF&I

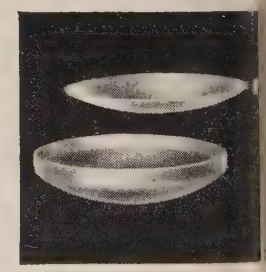
1691



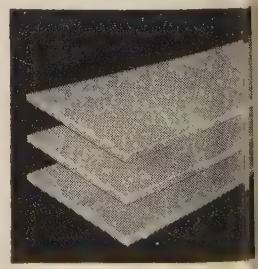
Large Diameter
Welded Steel Pipe



Stainless-Clad
Steel Plates



Flanged and
Dished Heads

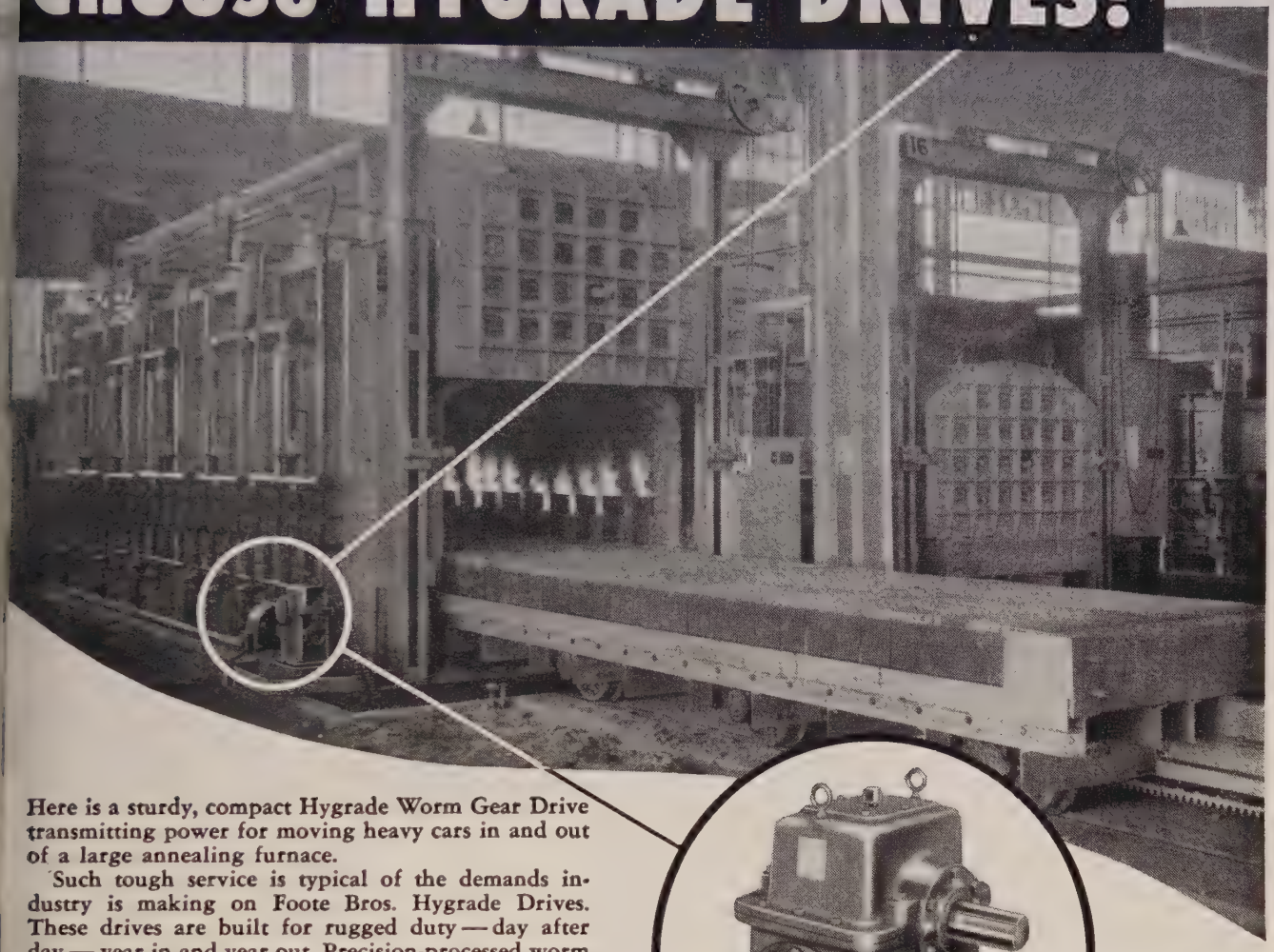


Alloy and
Carbon Steel Plates

OR RUGGED DESIGN

TROUBLE-FREE OPERATION . . .

Choose HYGRADE DRIVES!

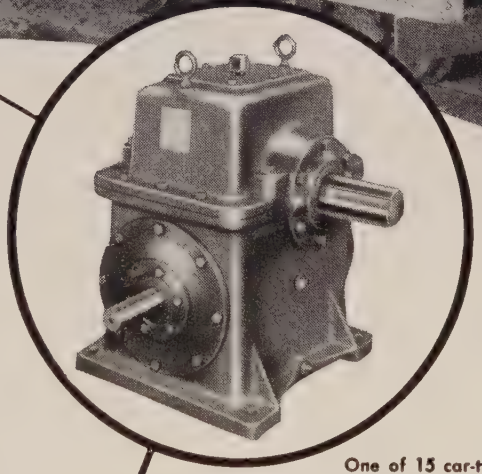


Here is a sturdy, compact Hygrade Worm Gear Drive transmitting power for moving heavy cars in and out of a large annealing furnace.

Such tough service is typical of the demands industry is making on Foote Bros. Hygrade Drives. These drives are built for rugged duty — day after day — year in and year out. Precision-processed worm gearing assures highest efficiency and optimum load-carrying capacity. Compact design gives maximum performance in minimum space.

Solve your tough speed reduction problems with Enclosed Hygrade Drives. Horizontal and vertical types available. Ratios to 4,108 to 1, capacities to 260 h.p. For applications requiring long, unsupported output shafts, use Vertical Hygrade in Hytop design.

See your Foote Bros. representative or write for information.



One of 15 car-type furnaces using Hygrade Drives at Warren, Ohio, plant of Copperweld Steel Company. Installed by Pennsylvania Industrial Engineers Division, Amsler Morton Co.

LINE-O-POWER DRIVES

MAXI-POWER DRIVES

FOOTE BROS.-LOUIS ALLIS GEARMOTORS

FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS.
GEAR AND MACHINE CORPORATION
Dept. X, 4545 South Western Boulevard
Chicago 9, Illinois

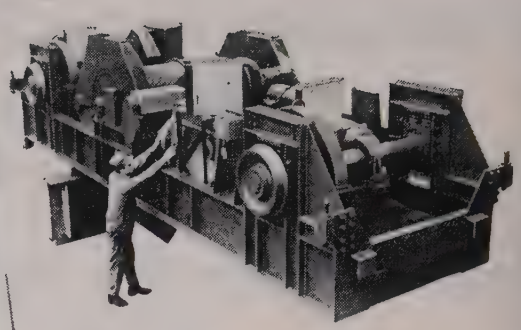
Please send me a free copy of Bulletin HGB on Foote Bros. Hygrade Worm Gear Drives.

Name.....

Company.....

Address.....

City.....Zone.....State.....



Step up your bridge capacity with a new Dravo Man Trolley..

Is your production slowed down because your bridge can't handle the tonnage you need?

Actually, it isn't always necessary to invest in a new bridge to correct this lag. Often an existing structure can be modernized easily by replacing the present man trolley with a light-weight Dravo-built unit.

The operation is practical and requires a minimum of bridge-downtime. One recent installation was completed within eight hours.

Replacement of inefficient, worn or inadequate trolleys can improve your operations at a fraction of new bridge cost. Consultation with a Dravo engineer does not obligate you in any way—and may help you eliminate a production bottleneck. Write or phone . . .

DRAVO

DESIGNERS *and* BUILDERS

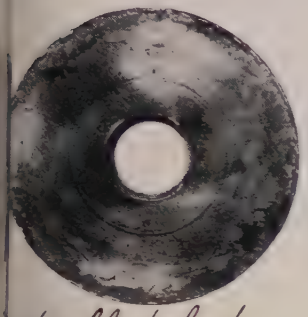
BRIDGES AND UNLOADERS • TOWER-TYPE UNLOADERS
WHIRLER CRANES • FLOATING CRANES
DRAVO RAIL CLAMPS • BARGE SHIFTERS
MODERNIZED TROLLEYS FOR EXISTING BRIDGES

DRAVO
CORPORATION

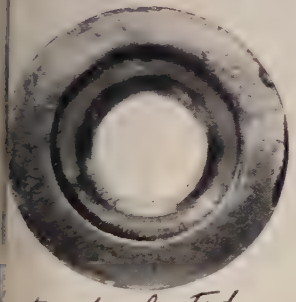
NEVILLE ISLAND, PITTSBURGH 25, PENNSYLVANIA

AIR CONDITIONING • BOILER AND POWER PLANTS • CRANE CAB COOLERS • DOCKS • INDUSTRIAL FOUNDATIONS • OPEN STEEL FLOORING
PUMP HOUSES AND INTAKES • SPACE HEATERS • WATER AND WASTE TREATMENT PLANTS • TOWBOATS AND BARGES

This punch gave double service!



This block had double life!



This die lasted 50% longer!

B-47 HOT WORK STEEL

gives you more runs for your money

. . . anywhere from 1½ to 5 times the Performance!

SOME TYPICAL EXAMPLES

B-47 dummy blocks, vs. 9% and 12% tungsten types, extruded more than twice as many brass and copper tubes. B-47 dies outperformed 12% tungsten type 1½ to 1.

B-47 punches, vs. low-carbon 18-4-1 type, hot pierced more than twice as many eyes in steel axes. See top picture.

B-47 die inserts, vs. 9% tungsten types, hot pressed more than twice as many steel side gear forgings. B-47 die inserts, vs. regular insert material, performed better than 5 to 1.

B-47 dummy blocks, vs. 5% tungsten-5% chromium types, extruded twice as many copper and brass tubes and rods. B-47 dies outperformed 12% tungsten-12% chromium type.

B-47 punches, vs. 5% chromium type, hot extrusion forged 1½ times as many automotive steel front axle spindles.

B-47 die inserts, vs. 9% tungsten types, extruded 1½ times as many high alloy steel automotive valves. This is considered a very difficult job for any grade of hot work steel.

Looking for a better hot work steel? You'll find it in B-47—an improved chromium, tungsten, cobalt, vanadium type whose superiority is established by actual performance runs such as those summarized above. All tests show that B-47 has unusual resistance to shock and abrasion at elevated temperatures.

Developed originally for applications in the copper and brass industry, B-47 has given excellent results on difficult hot work jobs on steel. B-47, when properly heat treated, exhibits a well rounded combination of red hardness, toughness, and resistance to wear and heat checking that makes it a valuable addition to the Allegheny Ludlum group of hot die steels.

Put B-47 to the test. You'll find that it will do any number of severe hot work jobs without washing out or changing size. Get in touch with A-L, today. Let us help you to use B-47.

• *Allegheny Ludlum Steel Corporation, Henry W. Oliver Bldg., Pittsburgh 22, Pa.*

SEND NOW

for "Blue Sheet" on Grade B-47

This four-page folder gives technical data on B-47 for brass extrusion dummy block and dies, valve extrusion die inserts, hot punch tools, forging die inserts, press forging dies, and hot work in general. *Write for your copy today.*

ADDRESS DEPT. S-42

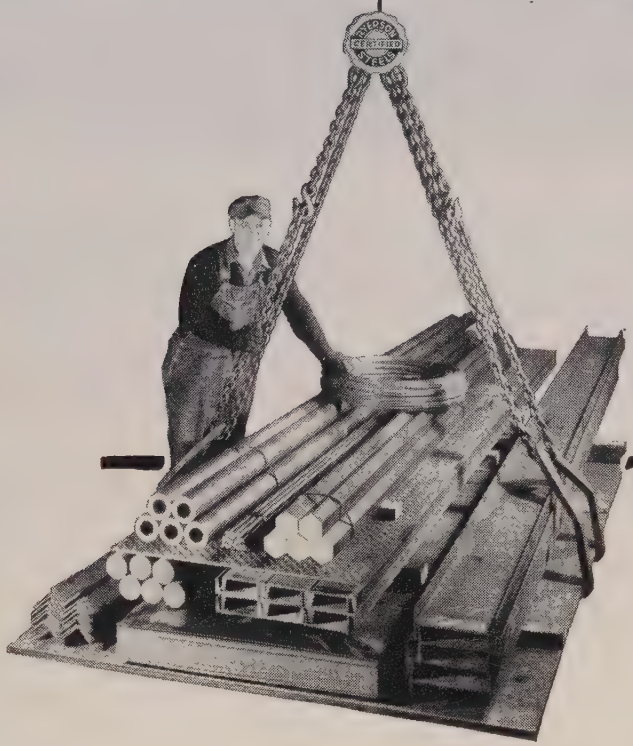
For complete MODERN Tooling, call

Allegheny Ludlum

W&D 3530

AL FINE TOOL STEELS SINCE 1854

For quick delivery



# of steel

Call Ryerson

As the world's *largest* steel service organization, Ryerson maintains the *largest* stocks of all available steels.

Ryerson deliveries are fast . . . cover everything from structural shapes and plates of carbon steel and bright sheets of stainless to high-strength alloys.

Ryerson service includes expert engineering aid . . . personal help on your steel problems . . . and sawing, shearing, flamecutting or otherwise preparing steel to your requirements.

With a network of 15 strategically located plants Ryerson brings quality steel quickly to your door. Although some stocks are currently unbalanced from a size standpoint, when you need steel—any kind or quantity—call the Ryerson plant nearest you and we will do our best to meet your every need.

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled and cold finished
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate.
SHEETS—Hot and cold rolled, many types and coatings
TUBING—Seamless and welded, mechanical and boiler tubes
ALLOYS—Hot rolled, cold finished, heat treated. Also tool steel
STAINLESS—Allegheny bars, plates, sheets, tubes, etc.
BABBITT—Five types, also Ryertex plastic bearings
MACHINERY & TOOLS—For metal fabrication

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETRO
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATT

The Metalworking Outlook

June 22, 1953

Will Steel Increase Be Absorbed?

Chances are good that most of the automakers will absorb much of the steel price increase. The added cost is $6.42 per car in the Chevrolet-Ford-Plymouth class (p. 45). Mounting competition will make all steel users think twice before they pass along the boosts. Purchasing agents hope to offset some of the higher steel costs by a thorough study of the extra cards to find ways to cut pennies. Watch for changes in buying habits over the next few months.

Some Other Prices Go Down

Although steel quotations went up, scattered prices in other lines are going down. For example, Ramset Division of Olin Industries Inc. cut prices up to 20 per cent on its entire light duty line of fasteners. Carboloy Department of General Electric Co. today initiates 15 per cent price reductions for its general purpose, single-point cemented carbide tools. Up until now in 1953, the consumer price index has averaged 113.7 of the 1947-49 average, compared with a monthly average of 113.5 in 1952.

Nonferrous Notes

General Services Administration, with five high-cost magnesium plants shutting down this month, is looking for tenants. It leased a major part of its Spokane, Wash., plant last week to the present occupant, Pacific Northwest Alloys Inc., to make ferroalloys . . . Aluminum Co. of America starts negotiations with United Steelworkers this week. In addition to demanding the 8½ cents granted by steel companies, the union will ask a guaranteed annual wage. Alcoa and Reynolds Metals Co. have contracts expiring July 31 while Kaiser Aluminum & Chemical Corp. signed a 2½-year contract in 1952, open for wage review July 31, 1953.

Step Toward Merger?

Watch for the AFL-CIO no-raid agreement to be approved formally. Although it has no teeth and is based on good faith, it probably will be supported by most of the affiliates of each organization. AFL's International Association of Machinists and CIO's United Auto Workers have already signed a co-operation pact. The general agreement is the first real step toward AFL-CIO unity. The pact would be effective for two years beginning Jan. 1, 1954—when the expected formality of approval is given by AFL's annual convention in St. Louis next September and CIO's in Cleveland in November.

More Action from ODM

Defense Mobilizer Arthur S. Flemming will survey the plant expansion goal in every industry related to defense and, where necessary, will fix new goals more in line with demands of total war. He'll follow that move by action to plug gaps found in industry's war potential. In that category one problem to be solved will be aluminum expansion. Two or three companies involved have had financing troubles. The spurt in ODM activity results because the agency on June 13

...ction-Engineering News—p. 85 The Market Outlook—p. 139

became a permanent defense agency as a White House reorganization order became effective.

Uncle Sam: Industrialist

Pressure is mounting to prevent the federal government from competing with its own citizens in the 100 separate business fields in which it now operates. The U.S. owns more than two dozen synthetic rubber factories, aluminum plants, several fertilizer plants, sugar factories, a helium gas factory, a synthetic gasoline plant, dozens of money-lending agencies, many steam and hydroelectric plants, hemp plantations, many large-scale housing projects, two railroads and many storage warehouses. Their combined assets total $30 billion and the U.S. interest amounts to about $27 billion.

Foreign Competition Mounts

Since Jan. 1, 1952, the U.S. has let 24 contracts for electrical equipment to foreign countries—contracts worth more than $13.5 million, representing 1.7 million hours of factory work and worth $3.5 million in taxes lost to the government. Westinghouse Electric Corp. was low U.S. bidder on more than $7 million of that $13.5 million, but lost out to foreign companies.

A Job for the Summer

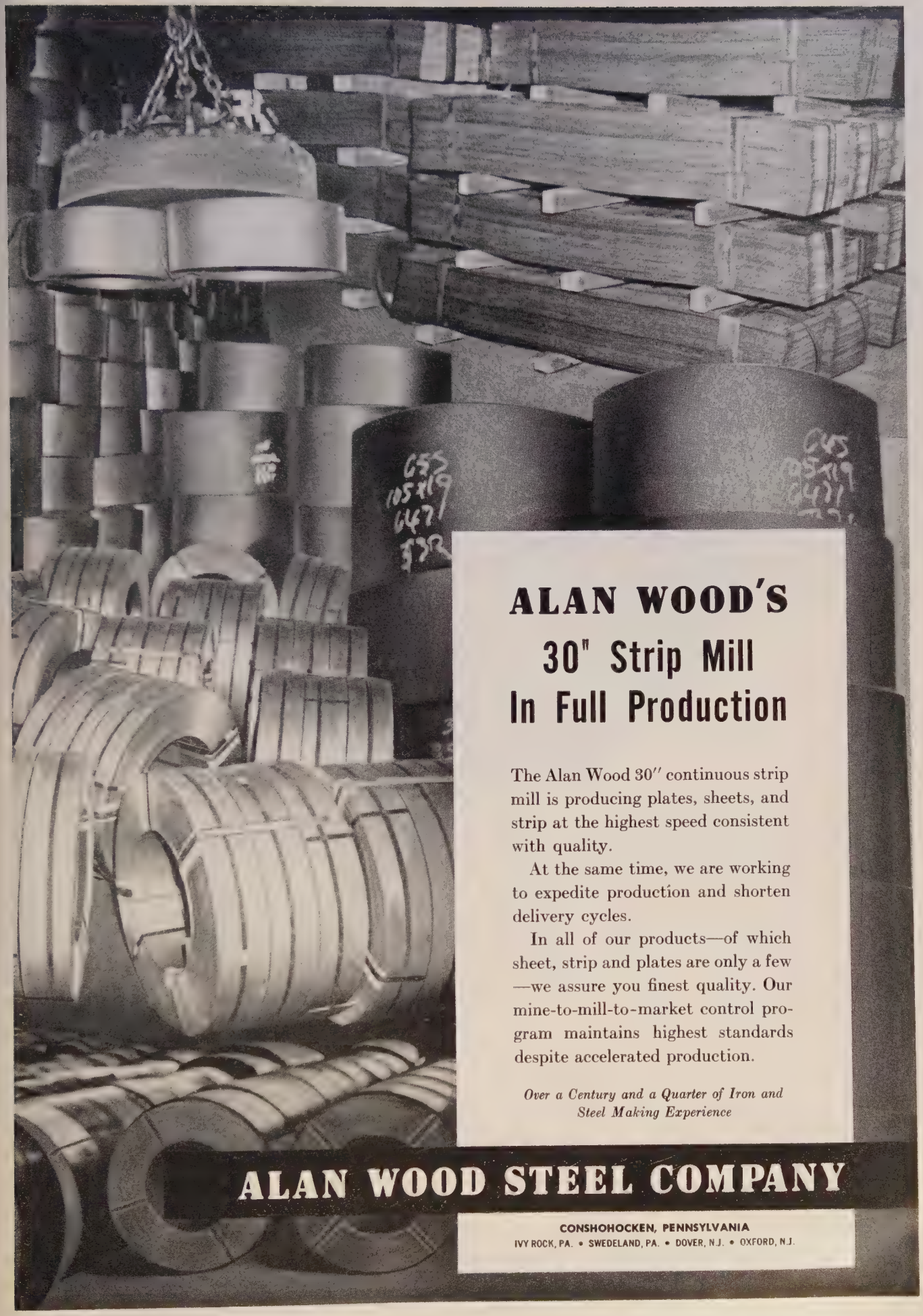
Planning to take on some college students for summer work? Associated Industries of Cleveland reports that most companies treat those employees just like regular ones in regard to union membership and pay. Company eligibility requirements normally deny them insurance and hospitalization benefits. Most firms also prefer to hire them from just after July 4 to just before Labor Day.

Straws in the Wind

The Defense Production Act, in much the shape that the House approved it, will be extended for two years . . . By the fourth quarter, steel mills and foundries will have to submit to U.S. controls agencies only a half dozen or less forms and reports, compared with 16 once required . . . Manufacture of specialized electronics equipment for military purposes is now in full progress at General Electric Co.'s new plant in Utica, N. Y.

This Week in Metalworking

Republic Steel Corp. enters the seamless tube field at its new S. Chicago, Ill., plant (p. 46) . . . Many companies—misunderstanding depreciation—are overstating their profits (p. 47) . . . Gray iron casters expect to mold another good year in 1953 and may even come close to the 12.8 million tons produced in 1952 (p. 48) . . . There's a rise in the number of company mergers (p. 49) . . . Sales of welding equipment may climb to $600 million in 1953 (p. 50) . . . Visitors saw what's new at the first Basic Materials for Industry Exposition in New York (p. 50) . . . Civilian sales of prefabricated steel structures are rising and are almost making up the slippage in government purchases (p. 55) . . . Established less than a year ago, the European Coal & Steel Community now rules over the business of more than 1000 companies (p. 56).



ALAN WOOD'S
30" Strip Mill In Full Production

The Alan Wood 30" continuous strip mill is producing plates, sheets, and strip at the highest speed consistent with quality.

At the same time, we are working to expedite production and shorten delivery cycles.

In all of our products—of which sheet, strip and plates are only a few —we assure you finest quality. Our mine-to-mill-to-market control program maintains highest standards despite accelerated production.

Over a Century and a Quarter of Iron and Steel Making Experience

ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PENNSYLVANIA

IVY ROCK, PA. • SWEDELAND, PA. • DOVER, N.J. • OXFORD, N.J.

Cast in One Piece... in Stainless

to resist corrosion

STAINLESS STEEL IMPULSE WHEEL. Buckets in this one-piece casting are accurately spaced through proper alignment of cores. Wall sections are held to close limits to maintain balance, and buckets are polished for maximum efficiency of wheel. Diameter: 4'-2". Weight: 2200#.

Produced by EMPIRE STEEL CASTINGS, INC., Reading, Pa., for S. MORGAN SMITH COMPANY, York, Pa.

Corrosion meets its master in this impulse wheel of cast austenitic stainless steel containing 19 percent chromium and 9 percent nickel...

Furthermore...in hydroelectric power generation, under the terrific impact of a "high head" of falling water...this *stainless* casting tends to work harden while putting water to work, thereby improving its resistance to erosion and abrasion.

Impulse wheels are only one of countless applications in which advantage may be taken of the various useful properties of chromium-nickel stainless steels.

You can trim bulk and deadweight by specifying correct types of stainless. Strong and tough, stainless steels resist wear and attack by nearly all oxidizing acid conditions. Moreover, complexity of design is not a limiting factor in casting chromium-nickel stainless.

Austenitic stainless steels resist creep, scaling and oxidation at elevated temperatures. And at sub-zero temperatures, they offer exceptional resistance to impact.

Investigate all the economies you may obtain by using stainless steel equipment. Send us your inquiries on the use of cast or wrought stainless alloy steels. Write us details of your problems for our suggestions.

At the present time, nickel is available for end uses in defense and defense supporting industries. The remainder of the supply is available for some civilian applications and governmental stockpiling.

EMBLEM OF INCO SERVICE

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

Take Time To Be Right!

Right now there is considerable dissatisfaction at home and abroad because the new Eisenhower administration has not developed a more positive attitude toward many of the important problems with which it is confronted. Our allies overseas are critical of us on many scores, but particularly on our apparent ineptness in foreign affairs. At home, the administration's critics charge that it has not even made a good start on fulfilling its campaign pledges.

It is true that the accomplishments of the new regime in Washington from Jan. 20 to date have not been too impressive. But before we make too much of this fact, it may be well to ask ourselves whether an impressive array of spectacular actions on the part of the executive and legislative branches of the federal government actually is of long range benefit to the country. There is much in the history of our nation during the past decade to corroborate the old adage that "haste makes waste."

For instance, consider the quick and often sensational decisions that our leaders made just before the end of World War II—the needless concessions to Russia in the Far East, the holding back of American forces near Berlin, the four-way division of Germany and Austria and the zoning of Berlin and Vienna, the partition of Korea at the 38th degree parallel, etc.!

And again consider some of the impulsive, trigger-happy sensational things that our leaders did on the home front! Among them the headlong rush into an all out war in Korea without consulting Congress as to policy or the military as to means, and the barging of the federal government into practically every wage dispute and particularly the ill-advised seizure of the steel industry!

All of these actions were positive. They were dramatic. At the time they were believed to be indisputable evidence of a strong and wise government. Today almost every sensible person realizes that the world would be far better off if most of these spectacular actions had never been taken.

The great need of today is to be right, even if it takes a bit more time.

E. L. Shaner

EDITOR-IN-CHIEF

WHERE TO BUY STAINLESS: Accompanying this week's regular issue will be found a supplement entitled "Guide for Stainless Steel Buyers." We believe buyers of stainless steels will realize at first glance that this 160-page booklet will be exceedingly useful.

It shows all of the sizes of finished forms of stainless steels furnished by 54 producers in the

United States, further classified as to types (American Iron & Steel Institute number), finish, etc. All in all, there are 28,000 entries and for each is provided a key to the name of the producer and the locality of its mill. For instance, assume you wish to know where you can obtain hot-rolled stainless steel sheets in cut lengths, No. 1 finish, type 405, 11-gage, 24-48 x 144 inches. You find that sheets of this specification can be obtained from Producer J 3 who has a mill at Washington, Pa. A key on page 2 identifies Producer J 3.

The more one studies this guide, the more one appreciates the wide range of types, sizes and finishes that stainless steel producers now make available to their steadily growing number of customers.

* * *

WE ARE THE CULPRITS: Pictures from behind the Iron Curtain (p. 57) indicate that the Chinese are building "the largest steel center in China" at Anshan, Manchuria. The Soviet information is to the effect that this work has been under way since the middle of 1952.

This "news" can be taken with a grain of salt. For decades the nine blast furnaces, 16 open hearths and rolling mill equipment at Anshan have constituted the largest steelmaking facilities on the mainland of the Far East. In late 1945 and early 1946, engineers from Russia removed much of the Anshan equipment to Russia. Early in June in 1946, Chinese communists dynamited some of the blast furnaces which the Russians had not stripped. The Russians also took everything worthwhile from a fairly modern Mukden arsenal and left intact an ancient arsenal.

These facts prove conclusively that at the end of World War II the Kremlin had no idea of acquiring Manchuria, China or Korea. The Communists are in China, Manchuria and Northern Korea largely because of bungling by the United States.

* * *

SIGNIFICANT STATISTIC: Last Tuesday marked the fiftieth anniversary of the founding of the Ford Motor Co. This milestone was observed appropriately in many ways. The two-hour TV show Monday evening was exceptional. The ceremonies at Dearborn Tuesday evening likewise were impressive.

In these festivities, one thing stood out clearly. The Ford policy is to revere the past but to key one's efforts to the future. At Dearborn Tuesday evening the Geiger counter which actuated the lighting of "birthday candles" was adjusted so that its function of throwing switches would not be exercised until it had registered 44,890,832 gamma ray impulses.

The special numeral—44,890,832—represents the number of vehicles built by Ford since the company was established on June 16, 1903. This 44-odd million is a statistic of great importance. Few persons have the capacity to recognize its real significance.

* * *

COURAGEOUS PROJECT: Jean Monnet's visit to this country has stimulated interest in the effort of the European Coal & Steel Community to administer the Schuman plan. He has been interviewed by newsmen who have asked him pointed questions. His reaction to this inquisition has been highly favorable. He is an enthusiastic exponent of ECSC and he envisions the time when this experimental venture in co-operation in regard to the production and sale of coal, iron ore, ferrous scrap and finished steel products (p. 56), in France, Germany, Belgium, the Netherlands, Italy and Luxemburg will pave the way for a real United States of Europe—embracing numerous factors beyond the economic ones embraced in ECSC. Should Jean Monnet succeed in his ambitious program, he could in time double or triple the economic potential of Western Europe.

* * *

OUTLOOK FOR PREFABS: Prefabricated steel buildings have fared well since World War II. Small manufacturers and warehouse companies sometimes were forced to use this type of structure because buildings of orthodox construction were difficult to obtain. Also prefabs were used extensively as temporary buildings.

Now the question arises as to how prefabs will fare in normal times. Government orders accounted for 45 per cent of the prefab volume in 1951 (p. 55), 33 per cent in 1952 and will account for an estimated 20 per cent in 1953. Thus far, increased civilian demand has offset much of the decline in government buying. Most of the dozen manufacturers of prefabricated steel structures believe that new designs in wall construction will lead to expansion of prefab business in the future.

SEND YOUR DIFFICULT STAMPING PROBLEMS TO—

EASTERN TOOL AND STAMPING CO.

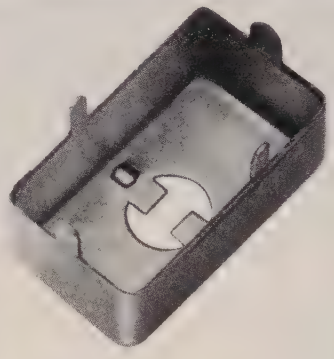
Typical example of 1-piece stamping from ⅛" thick by 7¾" diameter brass blank.

Here is a one-piece stamping that makes up into a hand stapler part.

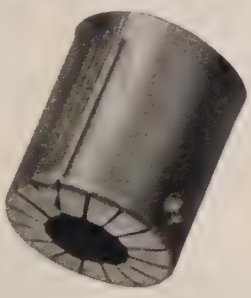
STAMPING SPECIALISTS IN DEEP DRAWING WORK - ALL METALS - ALL INDUSTRIES

Typical intricate one-piece stamp.

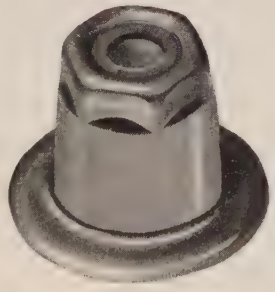
Notice the reduction in this 4⅛" long by ½" O.D. tube with 1⅛" flange.



Difficult switch part for automotive industry.



Bulb base for photo flash lap and seam produced by high-speed process.



Intricate vibration mount parts for industry.

Spring tempered phosphor bronze switch contact — note flat fold-back feature.

ETS EASTERN TOOL AND STAMPING CO., Inc.

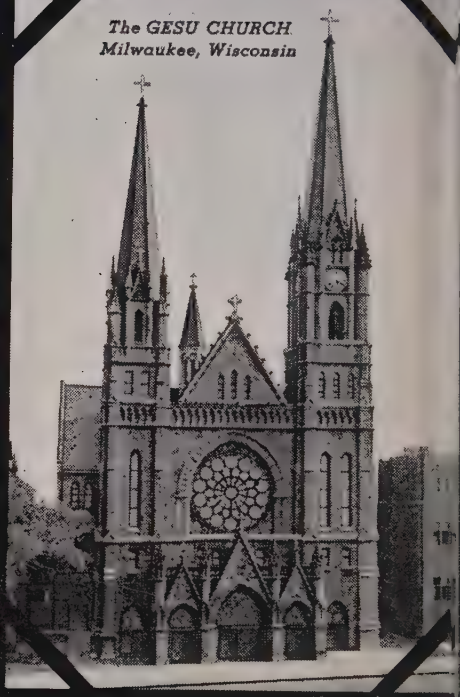
PRESSED METAL ENGINEERS

DIES AND STAMPING

SAUGUS MASSACHUSETTS

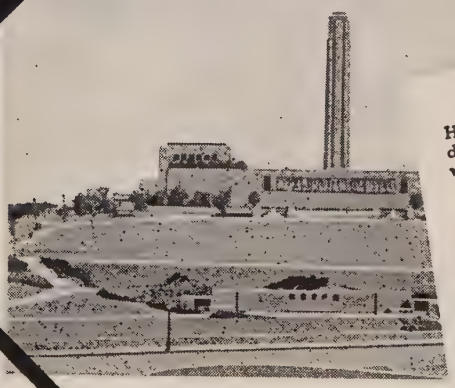
City Hall, St. Louis. Missouri

The GESU CHURCH
Milwaukee, Wisconsin



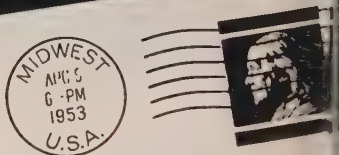
Buckingham Memorial Fountain, Chicago, Illinois

Liberty Memorial, Kansas City, Missouri



INLAND STEEL COMPANY
Headquarters: Chicago. The largest independent steel company in the Midwest. Ingot capacity: 4,500,000 tons.

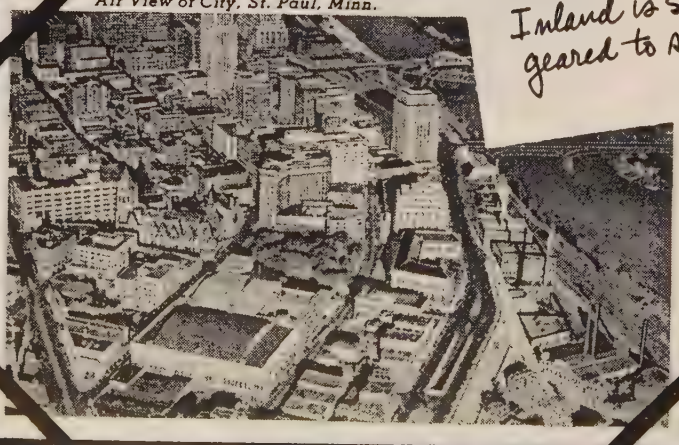
If you recognize these Midwest landmarks, chances are you're located in the area Inland is specifically geared to serve.



POST CARD

Steel Buyer
U.S.A.

Air View of City, St. Paul, Minn.



INLAND

INLAND STEEL COMPANY
CHICAGO

Sales Offices: Chicago • Milwaukee • St. Paul
Davenport • Kansas City • St. Louis • Detroit
Indianapolis • New York

POSTCARDS, COURTESY CURT TEICH & CO., INC.

THE STEEL WAGE INCREASE

PATTERN:—8½-cent-an-hour increase. End of the 5-cent-lower wage scale in southern plants—half by Jan. 1, 1954, the rest by July 1, 1954

WHO'S AFFECTED:—About 600,000 workers

WHAT IT MEANS:—An increase in steelmaking costs by about $4 per ton

THE STEEL PRICE INCREASE

AVERAGE:—$4 per ton in base prices

RANGE:—$3 per ton on hot-rolled sheets to $10 per ton on silicon sheets

WHAT IT MEANS:—$6.42 additional cost for steel per auto, 34.5 cents per refrigerator. Proportionate cost increases for all steel-using products

Up Go Wages, Up Go Prices

WILL STEEL consumers be able—or willing—to absorb all or part of the steel price increase?

That was the $64 question last week as the major steel companies raised base prices an average of $4 a ton, only a few days after the industry's wage settlement.

Reluctant—It's too soon for a full answer to the question yet, but scattered indications show that many steel buyers will be forced to absorb at least part of the boosts because of mounting competition, especially in consumer durable goods. As the table in the upper right of this page indicates, the steel cost increase resulting from last week's action will amount to $6.42 per car in the Chevrolet-Ford-Plymouth class. Porportionate increases can be expected for producers of all other steel-using products.

Yet, this latest base price hike is not all the increased steel costs that buyers of the metal must bear. Extras have been increased widely, and they probably boost the total price of steel an average $5 a ton. Since price controls ended this spring, the cost of the metal (including extras) has climbed from an average $111 per ton in April to $120 per ton now, a rise of about 8 per cent. (For further analysis of the situation and the new prices, see the market section beginning on p. 139.)

Stand-Off—The base price increase just about compensates for the higher steelmaking costs resulting from the 8½-cent wage gain. The higher extras, steel companies argue, will help offset greater costs obligated earlier and until now not fully covered by price increases.

The steel wage settlement came on June 12, 18 days before the steelworkers would have been allowed legally to strike for their demands. Negotiations were as harmonious as any in the postwar era, and the settlement was one of the simplest. Besides the pay hike, the North-South differential will be eliminated, but that applies only to a few companies. In addition, U. S. Steel Corp., which set the pattern for the settlement and which also was the first to announce price rises, will co-operate with the union to study insurance and pensions in anticipation of bargaining next year. The current contract expires on June 30, 1954.

Tough Problems Coming—Significantly, the corporation refused to participate in a joint study on the guaranteed annual wage. That promises to be a crucial—and a bitter—issue next year when the whole contract must be rewritten.

Steel executives will fight more pay hikes in 1954 because they know their customers won't stand for much more in price hikes. In fact, steelmen will have their fingers crossed until they learn the full consumer reaction to this increase.

WHAT A STEELWORKER NOW EARNS

Minimum Rate (Job Class 1):	$1.52 per hour
Maximum Rate (Job Class 32):	$3.225 per hour
Average Straight-Time Rate:	$2.057 per hour
Average Fringe Benefit Cost:	$0.407 per hour
Total Average Wage Cost:	$2.464 per hour

HOW STEEL PRICES WERE INCREASED

(Base Price Boost Per Ton)

H. R. Bars, Small Shapes	$4.00
C. F. Bars	5.50
Reinforcing Bars	4.00
Standard Shapes	5.00
Plates	4.00
H. R. Strip	4.00
H. R. Sheets	3.00
C. R. Sheets	4.00
Galvanized Sheets	4.00
Electrical Sheets	10.00

An inspector checks threads on a tube, left, at Republic's new seamless tube plant in South Chicago, Ill. At right, a red hot steel billet has just been pierced in one of the early operations to convert it into seamless tubing

Republic Officially Opens Tube Mill

Nation's third largest steel producer enters the seamless tube field at its South Chicago site. New plant will have capacity of 180,000 tons of tubing a year

REPUBLIC STEEL CORP. formally opened its new seamless tube mill in South Chicago, Ill., on June 15, although the mill has been producing the company's first seamless products since January.

The new mill, described by Republic as "the nation's newest and most modern," was begun in February, 1951. It is located on the site of the company's completely integrated South Chicago Plant on the Calumet river, thus permitting distribution by river barge as well as by rail and truck. It will have a capacity of 180,000 tons of tubular products a year in grades through N-80. Capacity operations are expected late this year.

Space — The mill occupies two major buildings. The hot mill in the first facility was built adjacent to the 36 inch-32 inch billet mill which supplies the tube rounds. The finishing mill and shipping facilities occupy the second building. Including storage, total floor space is more than 500,000 square feet.

Until the new mill began operations, Republic made electric resistance weld, continuous butt weld and electric fusion welded products. Sizes of the seamless products will range from 2⅜ inches OD up to 9⅝ inches OD.

Lone Star Opens New Works

Steel for oil country tubular goods is now being poured at the E. B. Germany Works, Lone Star Steel Co., near Daingerfield, Tex. The mill's No. 2 blast furnace has been tapped and is in operation. The Germany works—constructed under an $87 million expansion program—is expected to attain an annual capacity of 500,000 tons.

Manganese Recovery Possible

As much as half the steel industry's manganese requirements may be recovered from open-hearth slag, if a process being tested in Pittsburgh proves feasible economically. This process was developed in a project sponsored by American Iron & Steel Institute and the Bureau of Mines.

AISI reports the process consists of a two-stage treatment in which open-hearth slag is treated in a blast furnace and then in a basic converter. No unusual technical difficulties are present, but the cost of the recovery process, as used on a large scale, might outweigh the material's value.

Tin Plate Goal Raised

To increase the conservation of tin, the expansion goal for electrolytic tin plate facilities is being raised to 4.4 million net tons annually from 4.1 million tons as announced in July, 1952, says the Office of Defense Mobilization.

The revised goal calls for increased production capacity of 100 per cent over that in existence on Jan. 1, 1950. Current applications for amortization certificates now cover about 80 per cent of the revised goal.

Steel Serves a New Industry

The rapidly-expanding air conditioning industry uses about 130 pounds of steel in a 200-pound single room unit, according to information received by American Iron & Steel Institute. In centrally-located units for cooling an entire house, about 500 pounds of steel is used in duct work and an estimated 250 pounds is employed in the installation itself.

AISI adds that more than 1 million air conditioning units have been sold for all purposes since the end of World War II.

es Industry Overstate Its Profits?

Many companies do because management doesn't understand depreciation. That and other problems concerned delegates to the Machinery & Allied Products Institute meeting

IOT OF dividends declared by facturers would not be de- if depreciation were fully rstood by management."

at is what George Terborgh the annual meeting of the Ma- ry & Allied Products Institute, in Washington. "Depreciaon' he says, "provides only half funds for capital expenditures that the remainder must come new capital or current profits.

ed for Realism—"If we had a ct accounting for depreciaseveral billion dollars more ally would be available for hase of capital goods," says Terborgh, who is MAPI's reh director. "A realistic basis d provide for deducting one- the cost in the first one-third rvice life—because erosion of e is greatest in the first years rvice life.

API continues to work with the sury Department and the se Ways & Means Committee he hope of obtaining a real re- in depreciation treatment.

roperty-Owning U.S.—If peace es in Korea, and should the war end, industry may be d with some very serious probs due to the vast inventory ed by the U.S. government, a nse department spokesman MAPI. "Total inventory owned U.S. private industry is valued 44 billion; inventory owned by U.S. government comes to $50 on. The U.S. owns 20 per cent ll machine tools in the country. se basic statistics make it clear t intelligent policies in refere to this enormous reservoir of ernment-owned property will be essary if baleful effects on pri- e industry are to be averted."

Offshore procurement under the itary assistance program is to increased so as to build up pro- tion sources for ammunition l other military supplies that l make it less necessary to de- d on cargo haulage from the S. across a submarine-infested antic, another Defense department spokesman says. Offshore buying of such military end-items has averaged about 15 per cent of the available funds for purchasing, the remaining 85 per cent being for procurement in the U. S. There is to be a slight increase above 15 per cent for offshore procurement on the basis of present planning. Such offshore buying came to $600 million in fiscal 1952, is $1.4 billion in fiscal 1953 and is to be $2 billion in fiscal 1954.

New Tax Procedure?

Uncertainty continues as to what tax treatment to give industrial equipment under lease. The tax problems arise primarily in identifying the transactions as leases or as sales and in determining the rights of the parties to depreciation deductions.

Working with the Machinery & Allied Products Institute, the Bureau of Internal Revenue is studying the establishment of clear-cut rules or preclearance procedure which would permit leases to be made without the uncertainty as to a future adverse tax determination. So far that has been impossible.

"However," says Norman A. Sugarman, assistant commissioner, "progress has been made in defining the major issues which could be resolved by rulings, which in turn would provide a framework within which industry itself could determine the tax consequences of its industrial equipment leasing arrangements."

Heavy Press Program Cut Back

THE AIR FORCE's heavy press program lost seven presses last week.

The accompanying table indicates the ten units that still remain in the program, together with those that have been eliminated.

Chain Reaction—The effects of the cutback in a program that was to have cost $389 million will be felt by far more than just the companies that were to build and use the units involved in the change. The builders' subcontractors will also be hit, including such firms as U. S. Steel Corp. and Bethlehem Steel Co., which supplied both heavy forgings and die blocks; Midvale Co. and Erie Forge Co. which supplied forgings and A. Finkl & Sons Co. and Heppenstall Co. which supplied die blocks. Many other suppliers of components, cranes and additional equipment are likewise affected.

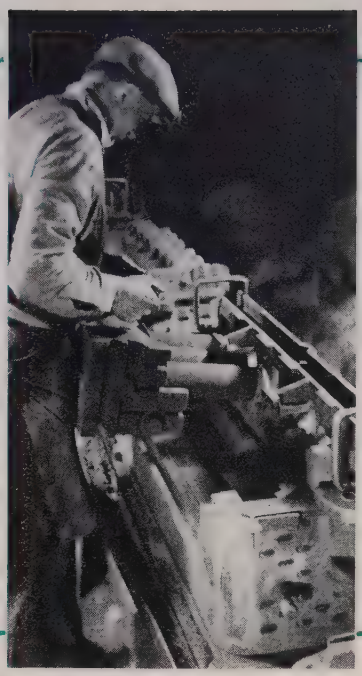
The Air Force says the move was made for two reasons: Too many presses were being built; and some technical and developmental problems remained unsolved regarding the presses cancelled. The partially completed presses that are involved in the cutback will be stored.

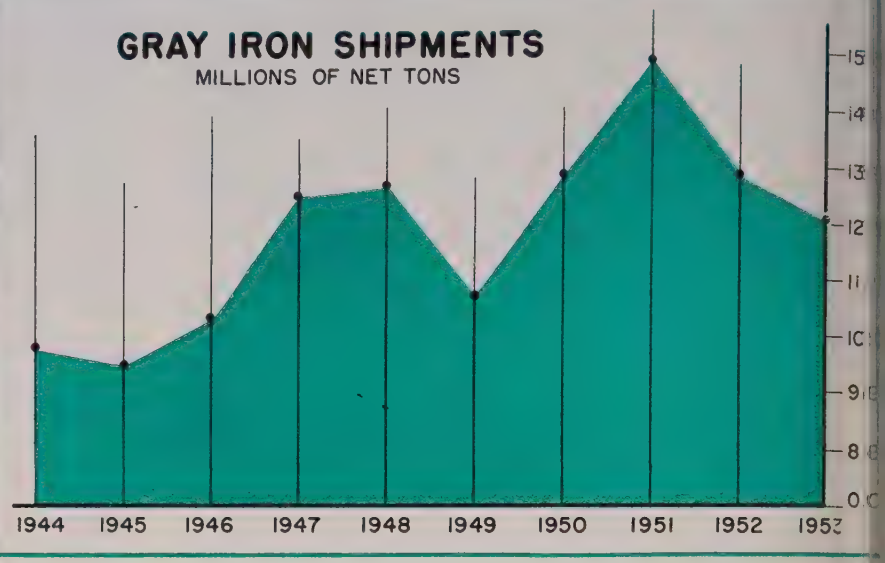
Program Still In Effect

	TONS	BUILDER	LOCATION	OPERATOR	LOCATION
FORGING PRESSES	50,000	Loewy	New York	Wyman-Gordon	North Grafton, Mass.
	35,000	Loewy	New York	Wyman-Gordon	North Grafton, Mass.
	50,000	Mesta	Pittsburgh	Alcoa	Cleveland
	35,000	United	Pittsburgh	Alcoa	Cleveland
EXTRUSION PRESSES	8,000	Loewy	New York	Harvey	Torrance, Calif.
	8,000	Loewy	New York	Reynolds	Phoenix, Ariz.
	8,000	Loewy	New York	Kaiser	Halethorpe, Md.
	12,000	Loewy	New York	Curtiss-Wright	Buffalo
	12,000	Lombard	Youngstown, O.	Reynolds	Phoenix, Ariz.
	13,200	Schloemann	Germany	Alcoa	Lafayette, Ind.

Program Cancelled

FORGING PRESSES	35,000	E. W. Bliss	Canton, O.	Kaiser	Newark, N. J.
	25,000	E. W. Bliss	Canton, O.	Kaiser	Newark, N. J.
	35,000	United	Pittsburgh	Harvey	Torrance, Calif.
	25,000	Baldwin	Philadelphia	Harvey	Torrance, Calif.
EXTRUSION PRESSES	20,000	Loewy	New York	Alcoa	Lafayette, Ind.
	20,000	United	Pittsburgh	Harvey	Torrance, Calif.
	8,000	Loewy	New York	Kaiser	Halethrope, Md.





Gray Iron Casters Continue Strong

Despite high production rates in recent years, casters look hopefully for new methods and techniques to widen the applications of their products

GRAY IRON casters expect to mold another good year in 1953.

A glance at the chart above shows that they are going over the 12-million-ton mark again this year. Donald Workman, executive vice president of the Gray Iron Founders' Society Inc., Cleveland, says they may even come close to the 12,860,000 tons produced in 1952. First quarter shipments back up that statement, running 35,000 tons over first quarter of last year.

High Rate—The society's April operating rate of 88.2 per cent (based on the average monthly production of the first six months of the peak year of 1951) is holding at first quarter rates, and May promises to be another good month. Production is expected to drop during the third quarter vacation period, but it should return to fairly high levels in the fourth quarter.

The five-day workweek is general throughout the industry, although some shops on the West Coast, where business is brisk at the moment, are going six days a week. There are scattered reports of three and four-day weeks.

Crystal Ball—What will happen in the future is largely dependent, like so many other industries, on the automakers, chief civilian users of gray iron castings.

The defense program has little effect on the industry, because less than 5 per cent of gray iron castings go to direct defense uses.

As Steel Goes—Another indication of what might happen to gray iron is steel production. Historically, the gray iron industry has maintained a 5-to-1 ratio with steel.

To maintain present level of production for long, foundrymen will have to find some new business someplace. Many shops are whittling away at what once was a substantial backlog. At present, the national average backlog for job shops is 1½ months.

Whether it is from a desire to find new business or simply industrial evolution, techniques of production are being developed to improve properties of the iron, dimensional tolerances of castings and casting surfaces in an effort to extend the already wide range of gray iron uses. Most of the developments, says C. O. Burgess, technical director of the Gray Iron Founders' Society are still too recent to evaluate with accur

Years of Progress—Mr. W man says that the past 10 y have seen more of this dev ment than any other similar iod in the industry's history. points out that foundrywor still a skilled craft, but each development brings it a step ward in modernization.

In a sense, he says, foundry are being forced into some de of mechanization in order to vive. Skilled foundry labo tight and expensive, and there no prospects of a letup. Ove past two years, about 150 iron foundries have dropped of the picture in the battle survival—and that during a pe of lush business.

Signs of Optimism — How foundrymen are not being pessi tic when ordering new equip and repairs. New orders for e ment in March exceeded Febr by $639,080 and totaled almost million.

More Stations for TV

Grants, authorizing the struction of four new televi stations, have been made by Federal Communications Com sion. Recipients are the Pat Broadcasting Co. Inc., for c nel 23 in Albany, N. Y.; Broadcasting Co. Inc., channe in Rochester, N. Y.; Van Cu Broadcasting Corp., channel 3 Schenectady, N. Y., and Fish

l Stations Inc., channel 4 in
le.
th these authorizations there
been a total of 362 grants is-
by the FCC in the past year.
re that time a ban on con-
tion was in effect.

d Fleet Bolstered

nstruction of 958 inland wa-
ay vessels has been completed
year or is planned to start
e year end, the Defense Trans-
Administration announces.
e 71 shipyards report that 223
els for inland waterway use
completed during the first
rter of 1953. Another 244
under construction on Mar.
and 491 were under contract.
TA is aiming for an expansion
or 1000 vessels a year for the
d waterway fleet. Since Jan.
950, 2223 ships have been com-
ed. Steel shortages cut into
duction in 1951 and 1952.

ry cargo barges make up the
of vessels constructed in the
three months of 1953. Some
of that type were completed,
e 21 tank barges were con-
cted. Tugs made up 30 of the
s completed. Seven were tow-
cs and seven miscellaneous non-
-propelled vessels.

-Communist Pledges Banned

you demand a contract clause
ch requires each union repre-
ative of your workers to file a
-Communist affidavit with your
pany, you may be violating the
t-Hartley Act.

o ruled the National Labor Re-
ons Board, which held that such
emand by the Square D Co.,
roit, a maker of electrical equip-
t, was a subterfuge to avoid
gaining with Los Angeles mem-
s of United Electrical Workers,
ndependent union expelled from
CIO in 1949 for pro-Communist
nings.

he five-member board said that
union's officers had already
d a non-Communist affidavit, a
o required by Taft-Hartley be-
e a union can receive NLRB as-
ance. In the above instance, the
rd said, the company was sim-
acting in bad faith by demand-
non-Communist pledges by
h union representative.

Industrial Marriages

More firms rush into ties that bind

MERGERS are news these days.

Many of the current deals are the results of long-term planning, only now come to fruition. Others, producing a merger bulge, are results of contemporary conditions.

Moving Reasons—Behind most of the current mergers of metalworking companies is one of these four motivating conditions:

1. Companies wish to fill out or augment product lines to better their competitive position.

2. Companies want to get additional production facilities or engineering experience without waiting to develop them within their own organization.

3. Companies wish to reduce the number and amount of subcontractors and subcontracting.

4. Companies are taking advantage of legal quirks in tax laws.

Examples of the first condition: Micromatic Hone Corp., Detroit, machine tool builder, purchased Diesel Engineering & Mfg. Corp., Chicago, producer of fuel injectors. Wood Shovel & Tool Co., Piqua, O., maker of shovels, spades, scoops, augers, etc., purchased the physical assets and wheelbarrow production facilities of Kilbourne & Jacobs Mfg. Co., Columbus, O. Parker Aircraft Co., Los Angeles, subsidiary of Parker Appliance Co., Cleveland, acquired Proof Industries Corp.'s complete line of aircraft hydraulic directional control valves along with Proof's order backlog of these products amounting to about $1 million.

Salem-Brosius Inc., Pittsburgh, illustrates the second motivating condition in its acquisition of American Cladmetals Co., Carnegie, Pa. "The purpose was to get proper plant facilities," says John Wickwire, vice president and secretary of Salem-Brosius.

Reduce, Not Eliminate — Those two reasons for mergers are old and familiar, but the last two have more recent origins. Many small companies have grown to medium size during and since the last world war. They've reached a state of development where it is more economical to do more of their component manufacture for themselves, cut down on the amount of outside purchases from subcontractors. Examples, again, are not hard to find but most of these companies do not stress this reason for fear of scaring their subcontractors. The idea is to cut down on outside purchases, not eliminate them.

Finally, the financial and tax aspect lurks in the background of many present-day mergers, thanks to the temptation offered by quirks in tax laws. Probably the most outstanding example is the Kaiser-Willys merger. Willys had made money, Kaiser had lost it. By putting the two together, each got the benefit of the other's profit and loss position. Ringing another change on the same theme, Westinghouse Air Brake bought the assets of Le Tourneau for $26 million, more than the book value of Le Tourneau plant and equipment. Westinghouse will get back more than half its $26 million in depreciation deductions over the next 10 years.

Advice on Mergers

If you're considering a merger or acquisition, here's some advice from a company executive who recently went through the experience:

"We ran into unexpected trouble when we consolidated our accounting, purchasing and engineering departments in one location. Salaried workers had every conceivable reason for not wanting to move. We finally ended up with about 5 or 6 people out of 40.

"My advice is: With every possible means, let your personnel know all about your plans, keep them up to date. Treat them just like you would yourself; they have a stake in the business, too."

Welding Spurts Ahead

Sales of welding equipment will rise to $600 million in 1953, up from $572 million in 1952

HOW TO FURTHER the growth in use of welding, which has already mushroomed to 3½ times the extent of 10 years ago, brought answers last week at the American Welding Society's spring meeting and exposition in Houston.

Welding Problem — Still confronting the industry, according to F. L. Plummer, AWS president, is the shortage of engineers who understand welding sufficiently to design for welded structures. He pointed to the Houston area and the Southwest in general as being highly welding conscious.

"These people were brought up on welding," he says. "Shipping distances separating them from major steel producing areas made it imperative to save all the steel tonnage possible. Welded structures cut that weight by 10-15 per cent; consequently the fabricators of the last 20 years think mainly in terms of welding."

Growing — Sales of electrodes, equipment and gas used in welding continue to grow at a rate three times that of the rest of durable goods. The 1952 total sales amounted to $572 million as compared to $532 million in 1951. Best estimates for 1953 put the total at $600 million.

Biggest gains were registered in the arc and resistance welding fields whose sales rose 22 per cent in 1952. More than 560 million pounds of electrodes helped to spark that rise. Gas welding, which also includes cutting, remained the same despite the 1952 strike shutdown of the steel mills, big users of gas welding.

Getting Closer—Titanium dominated most of the early technical sessions. Success was reported in brazing pure titanium using metal-depositing fluxes such as silver, copper or manganese chloride. In the course of this work, an intermetallic compound, tiag, was discovered and its ductility was verified.

Other papers described spotwelding of thin-sheet titanium-carbon alloys, recrystallization welding of manganese-titanium base alloys, and inert gas brazing or soldering without flux.

Exhibit Highlights — Automatic welding continues to hold the spotlight. At first attractive because it helped fight rising costs, emphasis is steadily shifting to automatic and semiautomatic welding equipment as a means of improving weld quality and uniformity. Much interest was centered around the display of multiple electrode welding, with its very high welding current.

Reznor

Sparks fly in welding equipment sales

Other big attention-getters were the automatic pipe-girth welding unit and an all-position inert gas-shielded machine for welding steel.

The Problem Is Basic

Visitors see what's new at a New York exposition on basic materials

MATERIALS RANGED from balsa wood to radioactive uranium, from 0.010-inch OD nickel tubing and hair-thin plastic laminating sheet to 3-foot diameter centrifugal castings and 7-foot long magnesium castings.

These and many other products were featured by 75 exhibitors at the first Basic Materials for Industry Exposition in New York last week.

Among The Exhibitors—Mullins Mfg. Co., Warren, O., demonstrated its Koldflo process for cold extrusion of steel. It showed cylinders with inside and outside[illegible] faces as smooth as 50 microi[illegible] and airtight concentricity p[illegible] by plug gage. Company is a[illegible] four 3000 ton extrusion pres[illegible] Warren for use on civilian [illegible] production by year end.

Hot spinning of steel tubing [illegible] Kentanium inserts was show[illegible] Kennametal Inc., Latrobe, Pa. [illegible] pany, has also developed roc[illegible] guide inserts of Kentanium fo[illegible] tinuous operation that have [illegible] ered as high as 138 hours' se[illegible] where normal life is seldom [illegible] than 6 hours.

New Alloys—A 10-inch [illegible] steel valve body plated with[illegible] 2 mils of nickel by the rece[illegible] developed Kanigen process [illegible] presented by General Ame[illegible] Transportation Corp., Chi[illegible]. New tin alloy materials, su[illegible] tin-zirconium and tin-titaniu[illegible] aircraft use, and a tin-nickel [illegible] plating material said to be as[illegible] able as chromium and attract[illegible] coloring that saves 65 per [illegible] nickel were displayed by the M[illegible] an Tin Bureau. Also talked [illegible] were a new high-purity, high[illegible] tility iron powder supersof[illegible] by successive anneals in hyd[illegible] atmosphere, and a high-p[illegible] aluminum that takes a high[illegible] finish by chemical process[illegible] jewelry use.

Atomic Energy Commissio[illegible] represented for the first ti[illegible] any industrial show, with its [illegible] of Industrial Development de[illegible] ing materials used, products, [illegible] ess control and information [illegible] ices. It disclosed technical d[illegible] of tooling innovations develop[illegible] nuclear work and announced [illegible] a reactor today can be bough[illegible] installed for as little as $20[illegible]

Conference—In conjunction [illegible] the show a three-day Basic[illegible] terials Conference allowed de[illegible] ers and engineers to consider[illegible] problems as new metals, [illegible] strength materials, high-tem[illegible] ture production, atomic en[illegible] and the all-important co-or[illegible] tion necessary among mate[illegible] production, design and sales[illegible] J. Harwood, metallurgical [illegible] sion, Office of Naval Research, [illegible] cussed new materials and t[illegible] meaning to industry; J. C. R[illegible] son, engineering division, A[illegible] Energy Commission, spoke o[illegible] terials and the atomic age.

Soaring Over Cutbacks

Small companies will probably land more aircraft subcontracts despite budget cuts

SMALL COMPANIES that scan the horizon for aircraft subcontracts needn't worry much about the $5-billion cut in the Air Force budget which has been proposed for fiscal 1954.

Aircraft production is expected to continue rising steeply in the coming months, although scattered cutbacks are almost certain to occur here and there. What's more, opportunities for aircraft subcontracts in fiscal 1954 may be even more plentiful than they are today.

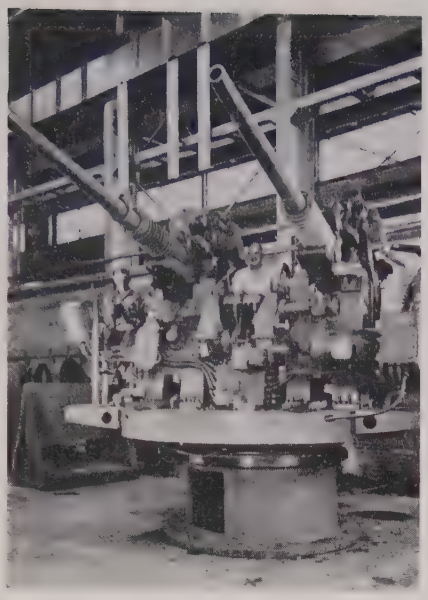
Unspent Dollars—Good reasons for optimism among aircraft subcontractors are shown in a joint report of the Civil Aeronautics Administration and the Bureau of the Census. The report says that the Air Force will have an estimated $23-billion carryover in funds appropriated but unexpended on June 30, when the current fiscal year comes to a close.

The great majority of the unspent $23 billion is already obligated for operating expenses, new facilities and ordered equipment. Several billions will remain unobligated, nevertheless. Unofficial estimates place this residue of funds at somewhere between $3 billion and $4 billion.

Most of the $5-billion slice is expected to come from this $3-billion to $4-billion leftover. A good portion of the rest will probably come in the form of cancellations of aircraft contracts. But aircraft contractors already have a staggering amount in unfilled orders—an estimated $18 billion, as of Apr. 1.

Bigger Rake-Off—Small business is slated to receive a higher dollar volume in subcontracts during the months ahead. That's the prediction of an Air Force team of small business "specialists," after surveying 97 large defense producers—most of them doing business with the Air Force—with current orders totaling about $15.5 billion.

These 97 large primary contractors have slated to subcontract $8.1 billion, or 52 per cent of their contracts, with an estimated $2.4 billion going to small manufacturers with 500 employees or less. In addition, $4.1 billion out of the 52 per cent slated for subcontracting is currently being examined for possible awarding to companies in the government's small business category.



Behind the Gun Mount

Some 80 subcontractors and more than 220 sub-subcontractors are participating in the manufacture of this 3-inch 50 caliber rapid-fire AA twin gun mount for the Navy. Lewis Machinery Division, Blaw-Knox Co., holds the prime contract for the gun mount

Defense Obligations Mount

The Department of Defense obligated $41.9 billion in the ten months ending May 1 and had $5.1 billion in obligational authority remaining for the final two months of fiscal 1953. Obligations in the ten-month period for durables procurement totaled $21.9 billion, with $1.2 billion remaining for the final two months of fiscal 1953. Soft goods procurement amounted to $2.9 billion, with $300 million to be obligated. Obligated for construction in the ten months: $2.1 billion, with $600 million of obligational authority remaining.

From the start of the Korean war to last May 1, the department obligated $153.5 billion, with $89.8 billion for durables, $11.1 billion for soft goods and $6.6 billion for construction.

CHECKLIST ON CONTROLS

Defense Materials System

DEFENSE CONTRACT LABORATORIES—Direction 3 to DMS Regulation 1, issued and effective June 12, 1953, provides for self-authorization procedure and priorities assistance for defense contract laboratories.

DEFENSE CONSTRUCTION—Direction 2 to DMS Regulation 2, issued and effective June 15, 1953, provides that any authorized construction schedule issued under CMP Regulation 6 bearing a program identification consisting of the letter A, B, C, D or E and a digit shall have the same status under the Defense Materials System.

Materials Orders

LABORATORIES—NPA Order M-71, giving priorities assistance to all technical and scientific laboratories, was revoked June 12, 1953, effective immediately. It is superseded in part by Direction 3 to DMS Regulation 1.

NICKEL STAINLESS STEEL — Amendment 1 of Schedule A of NPA Order M-80, issued and effective June 12, 1953, permits the use of nickel-bearing stainless steel by manufacturers of paper, paper board and pulp machinery and equipment in the production of certain parts and by manufacturers of steam-jacketed kettle interior shells, pressure jackets and fittings attached to them. Certification requirements of Section 4 of Schedule A also were amended.

ELECTRIC-ELECTRONIC — Amendment of June 12, 1953, of NPA Order M-17, effective that date, removed percentage limitations for the defense share of fixed composition resistors and rigid electrical conduit—electrical metal tubing. Manufacturers of those products are required to accept defense-rated orders as provided in NPA Regulation 2.

ALLOYING MATERIALS — Amendment of June 15, 1953, of NPA Order M-80, effective that date, removes all remaining controls over the following alloying materials: Boron, calcium, manganese, silicon, titanium (as an alloying material), tungsten, vanadium and zirconium. Direction 1 to M-80, amended concurrently, provides that requests for nickel allocations be made on a monthly basis instead of quarterly.

Controlled Materials Plan

BASIC RULES—CMP Regulation 1, basic rules of the Controlled Materials Plan, was revoked on June 15, 1953, effective July 1.

PREFERENCE STATUS—CMP Regulation 3, preference status of delivery orders under the Controlled Materials Plan, was revoked June 15, 1953, effective July 1.

DISTRIBUTORS—CMP Regulation 4, deliveries of controlled materials by distributors, was revoked June 15, 1953, effective July 1.

CONSTRUCTION—CMP Regulation 6, construction, was revoked June 15, 1953, effective July 1. It will be supplanted by DMS Regulation 2.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Many government officials, especially economists, think the guaranteed annual wage is desirable. But the White House will be strictly neutral when battle starts in 1954

GOVERNMENT ECONOMISTS are agog over the announced intention of the UAW-CIO to demand a guaranteed annual wage as its next major collective bargaining goal. The steelworkers want it, too, and will fight for the issue in 1954 (see p. 45).

Some U. S. officials look on guaranteed wages as desirable in that they provide greater security for the individual worker and tend toward greater over-all stability. But the government will confine its interest to staying on the sidelines in the capacity of observer.

Emphasis Recent — Government officials have not always felt that way. In 1947, when Mr. Truman was President, a guaranteed wage study advisory board was set up under the Office of War Mobilization & Reconversion and came up with an exhaustive report that dealt with the subject in all phases. It was figured that general adoption of the guaranteed wage would contribute handsomely to perpetuating postwar prosperity.

But relatively few companies embarked on the path thus outlined, and the unions were not insistent. About the only substantial result of the work was a modification by the Wages & Hours Division whereby employers with guaranteed wage systems were permitted to waive demands for overtime compensation.

Dangerous Gamble? — The big question involves the extent to which employers feel justified in assuming the responsibility of a guarantee. Or, thinking in terms of automobiles, to what extent are guaranteed wages feasible when there never can be firm foreknowledge under our type of free economy as to future trends in the volume of consumer spending for automobiles? And, to what extent could employers move in the direction of an annual guarantee without a dangerous gamble?

Following a two-day exploratory conference in Washington June 10 and 11, Walter P. Reuther, UAW president, admitted that the move "will have a significant impact upon the whole American economy," but declared that "a foundation has been laid for the committee's future work."

Competition from the U.S. . . .

Businessmen "who have reason to believe that the federal government is engaged in operations which are in competition with them" are invited to bring such conditions to the attention of the Department of Commerce.

That is what Assistant Secretary Sheaffer told a House Government Operations subcommittee which is studying the extent of government competition with private business. Mr. Sheaffer expressed the Commerce view that "as a general rule business can provide services and goods cheaper than can the government, provided that all costs, direct and indirect, are considered in arriving at the price to be charged."

Small Firms Protest . . .

Under consideration by the House Small Business Committee are protests from several small-business contractors over unusual and confusing changes in specifications during the performance of defense contracts.

The contractors reported that the changes caused cost increases which the particular services refused to absorb, thus threatening the execution of the contracts. Although legal recourse is available to the contractors in the courts, "the committee believes that a more realistic attitude on the part of the contracting agencies might have served the mutual advantage of both the contractors and the agencies in these instances."

United Press

SDPA Head Sworn In

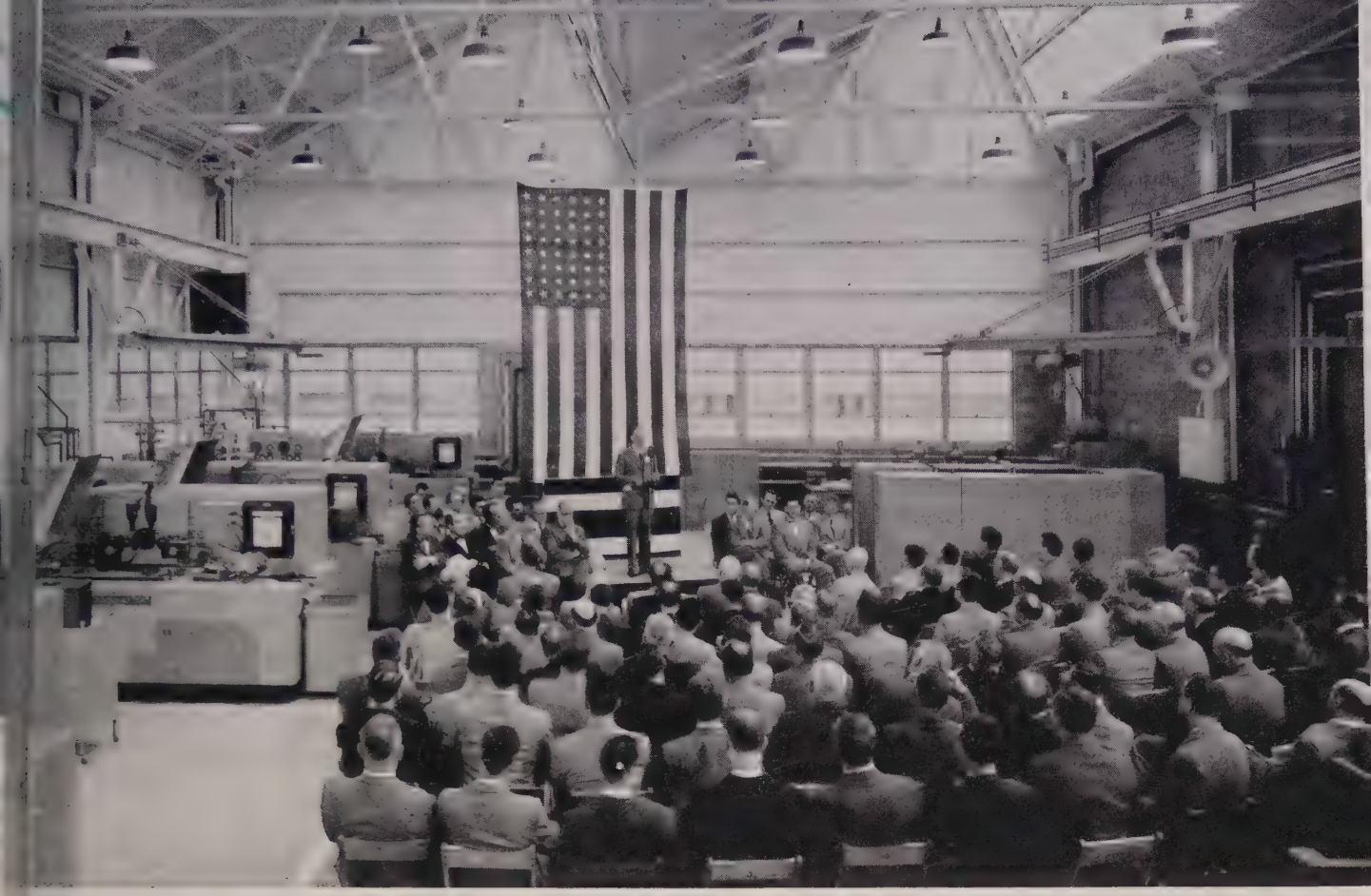
William D. Mitchell of Denver was sworn in June 8 as administrator of the Small Defense Plants Administration. Mr. Mitchell is a World War II veteran and a member of the District of Columbia, Utah, Supreme Court bars

Seaway: Needed Urgently . . .

Steel production in Pittsburgh, Youngstown and Wheeling is "undergoing a slow economic strangulation" and badly needs the "economic stimulus which will come from construction of the St. Lawrence Seaway. Such was the testimony of William Fowler, general traffic manager, Youngstown Sheet & Tube Co., before the House Public Works Committee which is considering seaway legislation.

Economist Resigns . . .

Dr. Louis H. Bean—who came into prominence because of his insistence in the post-World War II period that the country's economic welfare demanded expansion of the steel capacity to 120 million tons annually—has severed his connection of more than 30 years as an economist with the Department of Agriculture, effective June 30. He plans to open an office in Washington as "a footloose, free-lance consultant" in agricultural and industrial problems.



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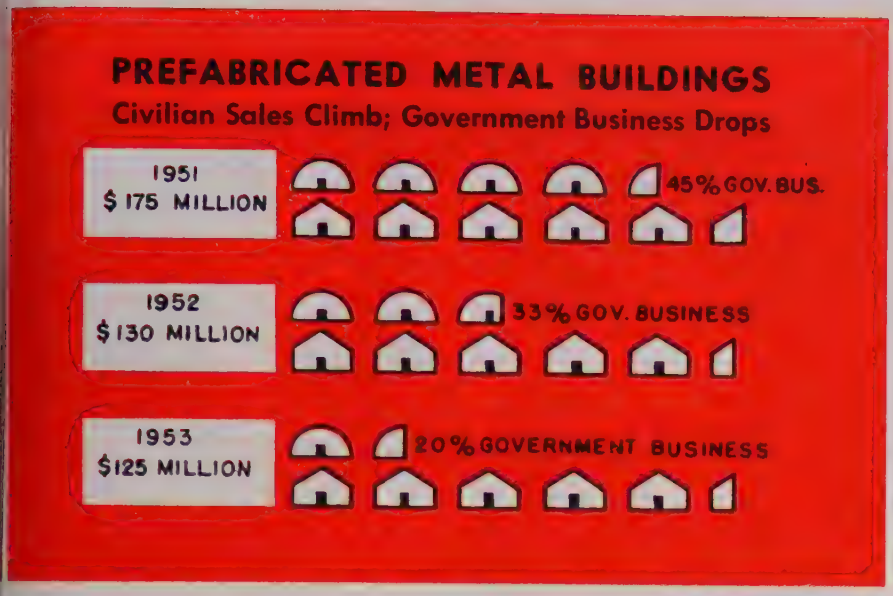

Prefab Steel Buildings Turn Civilian

Government sales are slipping fast but civilian sales are increasing almost as rapidly for makers of prefabricated steel structures

NEED more plant or warehouse space right now?

If so, it would pay you to investigate the trend toward prefabricated steel buildings. Time-saving ease of erection and more workspace per construction dollar are two of the prefab's trump tricks.

It Adds Up—Small manufacturers and warehouse firms which have been more or less forced to use prefabricated structures for desperately needed construction since World War II find these added advantages: Prefabs are easy to expand; they can be relocated; fire hazards are minimized. Prefabs bought as temporary buildings are being found sound for use as permanent structures. Parkersburg Rig & Reel Co., Parkersburg, W. Va., reports 95 per cent of the buildings sold by it are still in use on their original foundations. The 5 per cent which have been moved are salvageable except for foundation bolts.

One industrial engineer says: "We can construct Steelox buildings (product of Armco Drainage & Metal Products Inc., Middletown, O.) for 25 to 30 per cent less than properly designed masonry structures. They also have two added advantages for us: Time saved in construction and ease of future expansion, or relocation."

Divide by Two—Stran-Steel Division, Great Lakes Steel Corp., Detroit, says its dealers can deliver a large-sized, fully-engineered, noncombustible steel structure—complete with flooring, double walls with insulation equivalent to 36 inches of masonry, the average number of windows, doors and ventilators—for approximately $3 a square foot. That's about 40 per cent less than conventional construction costs, it adds.

Manufacturers of prefabricated steel buildings include Stran-Steel, Luria Engineering Corp., Butler Mfg. Co., Steelcraft Mfg. Co., Armco, Martin Steel Products Corp., Parkersburg Rig & Reel, Dresser Mfg. Division, Dresser Industries Inc., Star Mfg. Co. and Cowin Mfg. Co.

Important Exclusions—Together the industry did about $130 million worth of business last year, will do almost as well in 1953. These figures represent the sales of the buildings only and do not include other construction costs.

That's one point the building prefabers must overcome to sell their product in the civilian markets. Customers sometimes think the prefabricated building price includes on-site construction work and finishing costs. In most cases, they don't. Other hurdles prefab makers must clear are troubles with the trade unions as to which craft has the right to erect the buildings; the rising cost of steel, which is squeezing the profit margin hard as prefabers try to stay under masonry construction costs.

Quick Glance — These troubles and declining total sales might lead the casual observer to conclude prefab steel buildings are losing favor in the increasingly competitive civilian building market.

But a closer look, separating out the government work, shows growing civilian sales for prefabs this year—$100 million in 1953, $86 million in 1952. Prefab manufacturers are confident the total will continue to rise. "Why, we're not even sure there isn't a completely new, better way to construct a steel wall. Tremendous strides have been made since World War II in pre-engineered, mass-produced steel buildings. Give us time and we'll really give the construction business something to look at."

Write-Off Certificates Issued

Office of Defense Mobilization in the two weeks ended June 3 approved certificates of necessity for 149 new or expanded facilities valued at $197.5 million. Of the 149 expansions, 56 are to be carried out in organizations designated as "small business."

Among the largest certificates issued to metalworking firms were those to Great Lakes Steel Corp., Ecorse, Mich., pig iron, $10.7 million, 85 per cent allowed; American Can Co., New York, metal cans, $2.2 million, 30 per cent allowed; Baldwin-Lima-Hamilton Corp., Eddystone, Pa., hydraulic turbine presses and diesel locomotives, $2 million, 50 per cent allowed.

Taconite Output Launched

Shipments of taconite are on the way to blast furnaces from U. S. Steel Corp.'s new Pilotac concentrating plant at Iron Mountain, Minn. The corporation's Oliver Iron Mining Division has one production line in operation, with two others nearly ready.

MERCHANT STEEL EXPORT PRICES

(in dollars per net ton)

1952	February	$143
	April	132
	September	121
1953	January	99
	February	90
	March	92
	April	92

Source: European Coal & Steel Community

Washington discussions with Jean Monnet, ECSC president (left), Henri Bonnet, French ambassador to U.S., and Franz Etzel, German ECSC member, centered on a unified Europe

Harris & Ewing

STEPPING STONES TO UNITY

Common Coal and Steel Markets in Europe

LESS THAN A YEAR has passed since the High Authority of the European Coal & Steel Community came into existence to administer the Schuman plan on Aug. 10, 1952. Yet that supranational organization now rules over the business of some 1000 firms in France, Germany, Belgium, the Netherlands, Italy and Luxemburg which are engaged in production and sale of coal, iron ore, ferrous scrap and finished steel products.

Further rapid progress is being made toward creation of two other supranational organizations: One which will provide for a commissariat of the European Defense Community; the other which will create a European political community.

Steps Toward Unity — So said Jean Monnet, president, High Authority of the ECSC, Franz Etzel, vice president, and Dirk P. Spierenburg, High Authority member, when they visited Washington early this month. The establishment of common coal and steel markets for the above six countries are regarded as only the first steps toward a fully unified United States of Europe.

The High Authority, set up by treaty for a period of 50 years, has imposed the first supranational European tax in history. This levy will raise approximately $50 million in the first 12 months, rate of taxation graduating from 0.3 per cent of the net value of coal and steel produced for the first three months up to 0.9 per cent of the net value of coal and steel produced by ECSC members after a year.

Levy Divvey—Only a small part of the income will be needed to cover the High Authority's administrative expenses. Most of it will be set aside as a guarantee of investment loans needed for expansion among members, to pay for "readapting workers to technical progress" and erecting some 50,000 housing units for workers.

Conscious of the rapidly expanding output in the U. S. and the U. S. S. R. (steel production capacity in western Europe has increased only one-fifth in the last 20 years against a two-thirds increase in the U. S. and a sevenfold increase in the U. S. S. R.), the High Authority intends pushing expansion programs. Steel capacity is expected to climb from the present 42 million tons annually for ECSC member countries to 50 million tons by 1956; coal production is slated to increase from the present annual rate of 240 million tons to 280 million tons by 1957-58. Another facet of the coal expansion: It will help reduce the dollar drain of buying American coking coal.

Immediate Aid—Of more immediate concern to ECSC are ways to combat falling steel exports and steel prices. Exports of steel for the ECSC countries dropped 15 per cent in 1952 from 1951 (see table).

Within a comparable length of time, prices of merchant steels dived from $143 per ton (February 1952) to $92 (March, 1953), a drop of nearly 40 per cent.

Principal action of the High Authority to date is the establishment of "common markets" for

IRON & STEEL EXPORTS OF COMMUNITY COUNTRIES

(in millions of net tons)

	Pig Iron	Steel Ingots & Products
1950	1.1	7.7
1951	1.1	9.4
1952	.9 est.	8.0 est.

Source: European Coal & Steel Community

coal and steel. Eliminated are custom duties between the six countries on these products; dual pricing systems have been replaced by a single pricing system; quota systems are out; currency restrictions have been removed and transportation discrimination has been eliminated. That latter step alone has shaved assembly and shipping costs about $2 billion annually in the coal and steel industries.

Trouble Ahead—All is not easy traveling for ECSC, though. Road blocks loom ahead—cartel and government subsidy arrangements must be terminated, and necessary subsidies must be set up on a supranational basis. For example, an equalization fund will be established to permit Belgium's high-cost coal to be sold at the common-market price and at the same time pay the expense of installing improved machinery in Belgian coal mines in an effort to get their costs down. Uneconomic producers whose costs cannot be lowered through reasonable investments will be eliminated.

All that will take time; Mr. Monnet estimates it may take 5 to 7 years to get through this "transition period." But, Mr. Monnet adds: "It took the American people 7 years to progress from the Continental Congress to the Articles of Confederation, and another 8 years before your Constitution became the rule of the land. It took 3 years after your Constitution was drafted before it could be ratified by all the States . . . We Europeans have already accomplished much in a short time."

STEEL BEHIND THE IRON CURTAIN

Much of Anchan's new machinery is Soviet-made . . .

Concrete plant and rising steel hint at the project's size . . .

Soldiers lounge on a renovated blast furnace gas pipe . . .

Chinese Steel Gets a Soviet Push

Almost in the shadow of Korean fighting, the largest steel center in China, according to Soviet sources, has been under construction since the second half of 1952 at Anshan near Mukden in Manchuria. Machinery and technical assistance come largely from U.S.S.R. Although only as far north as Chicago, winter temperatures at Anshan range to 40 below zero

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HIGH-TENSILE STEEL

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N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections —resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel— resulting in longer life of products.

N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than can mild carbon steel.

Your product can be made lighter in weight . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

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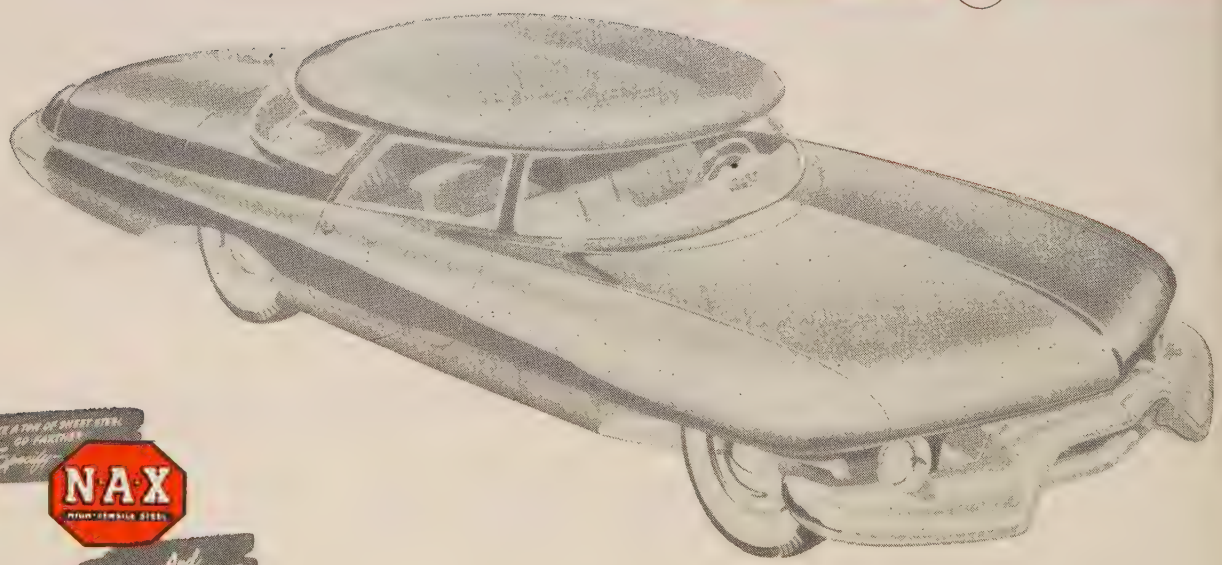


Specify N-A-X ... And "MAKE YOUR PRODUCT LAST LONGER"

KEEP YOUR SCRAP MOVING TO YOUR DEALER

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

Automakers are none too enthusiastic about the 12-volt ignition system now being used in some high-horsepower cars. They may go to dual ignition or the magneto

DETROIT

STILL A VERY live wire indeed is the 6-volt versus 12-volt ignition system controversy.

Engineers talking ignition points at the SAE summer meeting made it quite clear that 12-volts does not constitute the best of all possible worlds and that perhaps rather than being a panacea the system is creating more problems than it has solved.

Bad Points—Take the matter of lighting. V. J. Roper of General Electric Co. points out that 12-volt headlights are inferior to their 6-volt counterpart in many cases due to the fact that the filament is thinner and longer. This means greater heat expansion and distortion in the filament when the light is on with the result that the optical setup is apt to be in misalignment with the filament. The beam-off-the-beam problem is not present in other bulbs in the car's electrical system, but in all bulbs and radio tubes the increased susceptibility to breakage of the more fragile filament makes the engineers wince. Cost increases for 12-volt bulbs are currently about 14 per cent and the differential will probably not be erased by higher volume, says Mr. Roper.

Tooling costs for the 12-volt battery are extremely high and must be passed on to the consumer, noted L. E. Wells of Electric Storage Battery Co. Currently selling at about 20 per cent more than 6-volt batteries, the 12-volt units are definitely not a high profit item for their makers. Though tooling costs are being spread over as wide a period as possible, manufacturers still find that the inherent material and labor increases of the 12-volt battery make any closing of the price gap doubtful.

Standardized—Only two types of 12-volt battery are currently being made to keep the investment down compared with 18 types which could be produced. Further, while the 12-volt battery is being built to give greater watt-hour capacity, a 6-volt battery of the same capacity would be inherently less expensive. And contrary to popular belief, of course, the 12-volt battery does not provide twice the life of a 6-volt battery.

Starting does not justify the switch to 12-volt ignition, says C. R. Boothby of Electric Auto-Lite Co. Cranking torque, despite higher compression ratios, is steadily going down and a load 50 per cent greater than the average current starting torque demand could be handled by a 6-volt battery. Generator and starter costs are not a significant factor since the units are substantially unchanged under either system. Early generator cut-in is more important for long battery life under either system than high ultimate output, he notes, but when battery loads reach 60 amps or better a shift to 12-volt ignition is indicated. In general that load has not been reached.

Costs More—The 8200 parts and 8.5 miles of copper wire in the electrical system of the average car can contain perhaps 15 per cent less copper under the 12-volt system than under the 6-volt system. However, in the final analysis 12 volts is costing Harry Horsepower about 15 per cent more than 6 volts, and that differential should remain relatively constant even though production volume increases greatly.

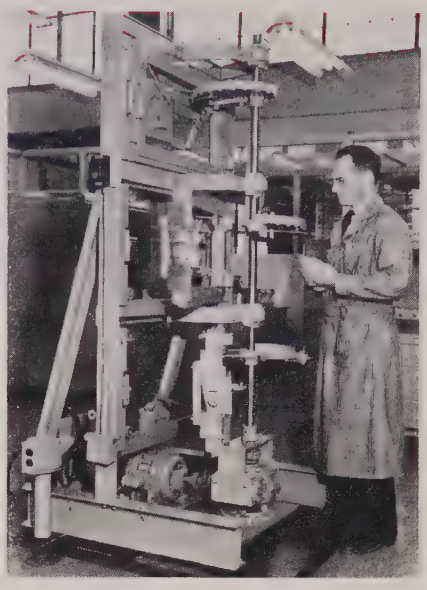
What then is the factor in favor of 12-volts? Basically it is the ability of the system to fire a spark under greater pressure than a 6-volt system, says H. L. Hartzell of Delco-Remy Division, General Motors Corp. Compression ratios of 7.75 or greater which demand higher voltage are in wide use as horsepower goes up.

More Current Needed—A compression jump from 6.4 to 8.5 gives a 70 per cent cylinder pressure increase at 4000 rpm and one way to get a spark across the gap under this pressure is to jump the current in the primary to 12 volts.

But though 12-volt ignition gives a lower peak value at the breaker points tending to increase point life, the general energy level is higher causing transfer and erosion. To meet this problem hot-rodders have used another idea successfully for years—dual ignition.

Alternate Ideas—Consisting of two sets of breaker points, two coils and two condensers discharging into a single set of plugs, dual ignition does the same job as 12-volt ignition, without modification of the car's electrical system, at compression ratios hovering around 12 to 1. Another idea older than the Model T is the magneto universally utilized on aircraft. That was employed by Chrysler in getting its Firepower V-8 up over 400 horsepower, once again requiring no change in the car's electrical system voltage.

Both of these devices are coming



Watch Your Fingers!

To make sure its automobile locks will stand 50,000 slams with impunity, Chrysler Corp. engineers rigged up this machine to slam three simulated car doors at once 740 times an hour

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in for close scrutiny as the whole auto electrical field begins to bear the cost of conversion to 12 volts just to fire spark plugs. It could well be that some engineers took a short circuit which is only now beginning to shock the industry.

Plastics in Autos

Another meeting of considerable interest was that dealing with plastics as automotive engineering materials. Though the average car contained only 1.5 pounds of plastics ten years ago, today that figure is over 9 pounds. Still small compared with the remaining 3500 pounds of various materials that go into an automobile, percentagewise, the growth is about 700 per cent and the trend is snowballing.

Dealing with the "pineapple" in the center of the 1953 Ford taillight, J. T. O'Reilly of Ford Motor Co. explained that in the early models this year the part was vacuum aluminum plated and lacquered. Scratches and flecks soon revealed the red plastic underneath, however, and today the taillight is made in two parts.

The major part is the red taillight lens with the pineapple protrusion cast in red plastics. The "chrome" pineapple cover is a clear plastic sleeve which is vacuum aluminum plated on interior and then given a coat of primer paint to insure opacity. The coat also serves to protect the aluminum coating which is only four millionths of an inch thick, and the sleeve is then assembled onto the taillight lens with rubber cement.

The resemblance to chrome is well nigh perfect and the method of fabrication makes the part inexpensive compared with the cost of an actual chromed sleeve of metal. The sleeves are molded on a 10-second injection, 30-second water cool and 10-second eject cycle in groups of eight. Gates and runners can be reground and remelted.

The parts are then loaded into a photographic-type vacuum plating machine where the pressure is reduced to 0.5 microns, and aluminum on tungsten filaments is vaporized by heating. Just one pound of aluminum covers 25,000 square feet to the 4 millionths of an inch required. Total time consumed by the metallizing operation is about 15-20 minutes.

Parking and dome light bezels of clear plastic have been treated in the same way to produce the appearance of a chrome bezel and medallions and steering post covers (they're no longer horn buttons) are other products of the vacuum plated plastics art. The attractiveness of many of these items has run so high that special means of attachment to discourage thievery have been developed by many firms.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,396	542,559
June		542,478
July		226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
May 16	177,305	129,945
May 23	162,447	127,759
May 30	125,868	104,935
June 6	134,619	128,837
June 13	166,527	130,574
June 20	171,000*	129,317

Sources: Ward's Automotive Reports. *Estimated by STEEL

But not all plastics are decorative alone, says Travis Meister of Kaiser-Frazer Corp. Among functional items are insulators, sealers and mechanical parts such as gears, cams, bushings and gaskets. Tubing, filter materials and fabrics are also made of plastics in increasing quantity.

Among the properties which nylon, for example, offers engineers are silence in speedometer gears, freedom from lubrication, long-wearing qualities, resiliency and a coefficient of friction one-fifth that of steel. The material may be readily molded and displays an ability to "roll with the punch" which eases mechanical tolerances.

Nylon, however, does have drawbacks, says Parke Woodworth of E. I. du Pont de Nemours & C Inc. Temperature limits are abo 250 degrees F, pressure limits bearings over 500-1500 pounds p square inch are inadvisable a molding tolerances do not hold machining tolerances. However, the case of the speedometer gea cost was cut in half while t qualities of the part itself becam more satisfactory.

Heater ducts on one Dodge mo el, battery trays and air cond tioner ducts are items being co sidered for plastic fabrication Chrysler, reports A. Carter Chrysler Corp. Also a probab development by the firm is co vertible tops of fiberglas whic can be installed for the wint season for added comfort in blu tery winds. Experimental deck lid doors, tops and fenders built an tested by the firm showed a weig saving of 48 per cent over comp rable steel components but cree buckling and distortion must y be evaluated for such parts igno ing the omnipresent cost bugbea

Plastics in Dies

More facts on plastic dies we given the interested engineers H. D. Thompson of D. G. Pro ucts Corp. Laminated face di with a backing of steel or fiberg cost about $2.50-$3.00 per squa inch, one-fourth to one-half t cost of steel dies. Life vari acutely. One Dodge truck pan die has turned out over 57,0 pieces with minor repairs eve 10,000 pieces. On the other han some dies have never produc more than a few sample parts b fore excessive abrasion destroy their usefulness.

Among plastic dies being use by Ford Motor Co. are: An a duct die, a radiator deflector d a valve rocker arm cover die, dash panel insulation die and Mercury hood die yet to be teste A front bumper spotter made plastic in use at Ford weighs on 71 pounds compared with the 4 pound steel spotter it replaced.

Among questions yet to be a swered in the plastic die field a how small a radius can becom what is the optimum length of r and strength that can and shou be engineered into a given die to a given job.

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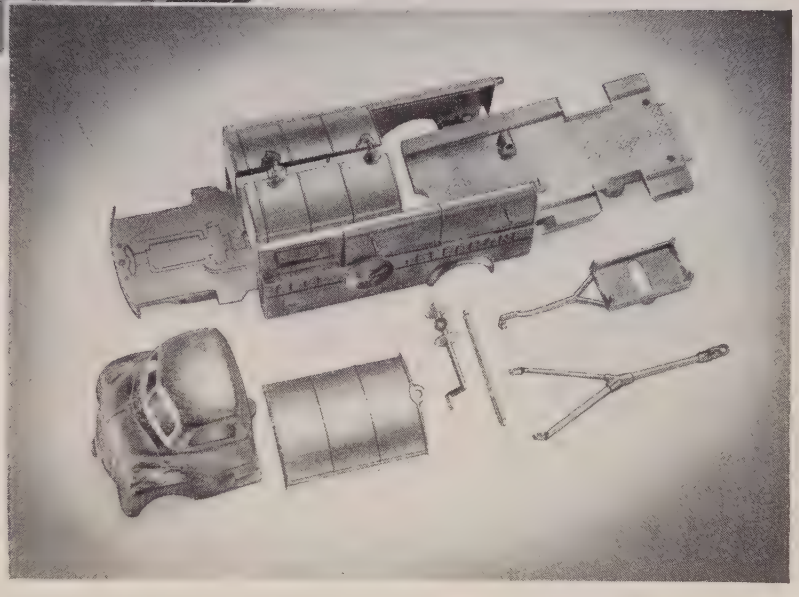

Faithful reproduction of detail is an easily obtainable characteristic of ZINC Die Castings, exemplified by toy and scale model applications. This foot-long Bell telephone truck—by Hubley—is almost wholly assembled with the pictured ZINC Die Castings. The reasons behind this selection of metal and method should be of interest to product engineers in fields far removed from the world of make-believe.

Because of the excellent castability of ZINC Die Casting Alloys, it is possible to produce parts which follow faithfully every infinitesimal detail machined into the die casting die. Furthermore, ZINC Alloys are cast in high speed plunger-type machines with long die life assured—thanks to the relatively low melting point of ZINC. Add to this the inherent strength and excellent finishability of ZINC Die Castings and you will appreciate why Hubley utilizes them for toy production—and why they are preferred in most other fields of product engineering.

In selecting a die casting alloy there are many factors —both physical and mechanical—to be considered in addition to the base price of the metal. Ask any commercial die caster about the advantages of ZINC over other die casting metals—or write to us.

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The Research was done, the Alloys were developed, and most Die Castings are based on

HORSE HEAD SPECIAL (99.99 + % Uniform Quality) ZINC

"R B & W took us off a *hot spot* by cold-forging this key fitting"

● *"You know how important that little fitting is, Joe,"* continued Mr. Tobin. *"It connects the oil line to this filter we* make, and it was this component that gave us one headache after another."*

"How did you clear up the trouble?" Joe asked, as he peered at the oil filter he had seen on so many cars.

"Well, these spuds, as they are called, used to be machined from bar stock. If there were checks or seams in the bar, the machining process failed to detect them. Realizing that spot checking would not eliminate our difficulty, we were forced to magnetically inspect every single spud. This magnetic inspection threw production costs out of line on such a small item. It also showed us that a sizeable part of our production had to be rejected, thus indicating that a change of the production method was necessary.

"Then one of our men thought of RB&W and it wasn't long before their engineers came up with the idea of cold-forging this fitting. Cold-forging made the spud stronger and eliminated the danger of cracking and leaking. It also made the fitting easier to weld to the filter. As a bonus, they even did away with one of the machining operations by forging a countersink at the same time they forged the fitting. Now we're getting better spuds at lower cost in less time — and we no longer need the magnetic inspection."

Maybe this sounds like a special case to you, but it puts in sharp focus RB&W's down-to-earth engineering skill, as well as our practical experience in designing and fabricating the kind of fasteners that can solve your assembly problems.

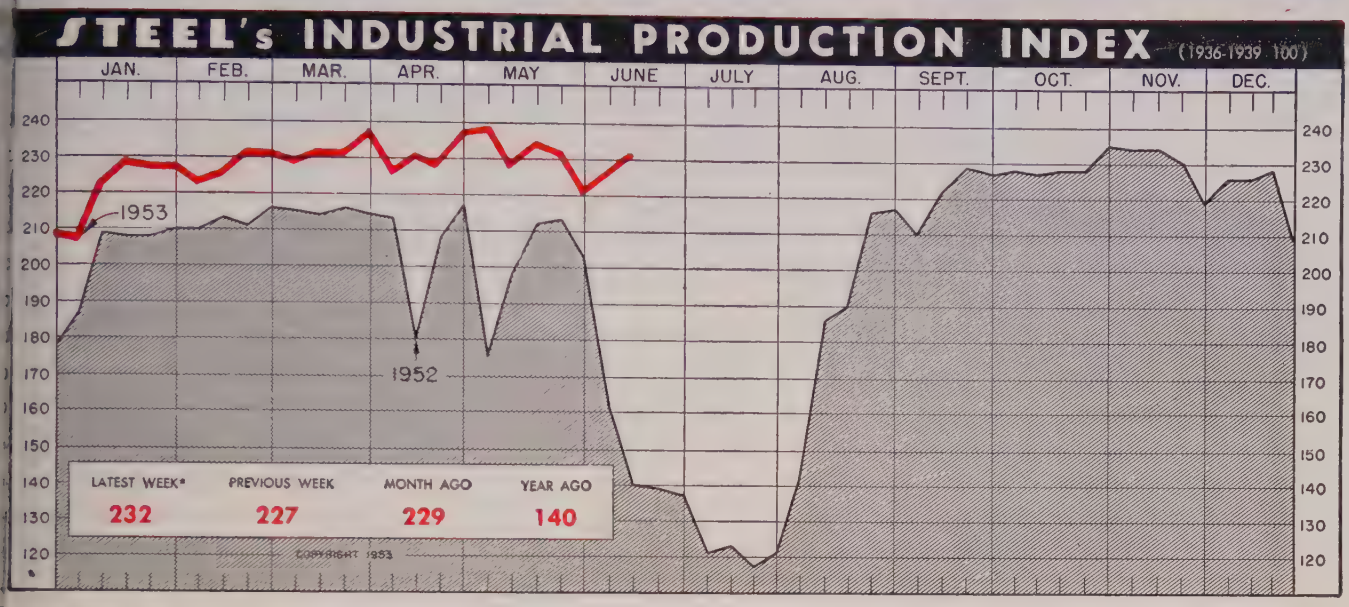
Most of your fastener requirements can be met with standard products from our stock. However, if the unusual is called for, we'll design and make it for you—as efficiently and quickly as we turned out a better spud for this filter manufacturer.

Remember—for any fastening job, it's a smart move to call in RB&W. You can count on RB&W bolts, nuts, screws, and rivets for uniform accuracy, dependability and physical properties. And you can also count on fast service from RB&W's strategically located plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents at: Portland, Seattle. Distributors from coast to coast.

RUSSELL, BURDSALL & WARD
BOLT AND NUT COMPANY

*Fram Corporation, East Providence, R. I.

R B & W 108 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG


STEEL's INDUSTRIAL PRODUCTION INDEX (1936-1939 100)
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
240 230 220 210 200 190 180 170 160 150 140 130 120
1953
1952
LATEST WEEK* 232
PREVIOUS WEEK 227
MONTH AGO 229
YEAR AGO 140
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*Week ended June 13 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Automobile output will continue to sustain industrial production at present high levels. A Korean armistice may be a better tonic for business than some people have thought

AUTOMOTIVE assembly lines continue to speed the production of passenger cars.

A milestone flew by last week when the automobile industry turned out the 3-millionth car of 1953. This marker was reached with ease, for during the week ended June 13, U. S. and Canadian plants jumped their output of passenger cars and trucks a total of 31,908 units above the previous week, according to *Ward's Automotive Reports*. The combined outturn for the week totaled 166,527 units compared with 130,574 units in the week ended June 14, 1952.

Largely Responsible — Largest factor in the increased production of automobiles during the week of June 13, was the recovery of the Ford Motor Co. from the strike at its Canton, O., forge plant. With Ford planning to make up for this lost production it should not take long for the automobile industry to reach the higher output levels of a month ago. And those levels were attained even though workers at the Muncie, Ind., plant of Borg-Warner Corp. were out on strike.

Enough Incentive?—Perhaps the wage settlement in the steel industry will provide both parties in the Borg-Warner dispute with the incentive to reach an agreement. This strike is about two months old and the independents in the automobile industry are doing most of the suffering. With an end to this strike it is believed that the independents will make every effort not only to reach former levels of production but to make up for lost output. As with the big three, the independents are keenly aware of the fact that a tremendous retail market exists. The hard facts concerning demand make all the automobile manufacturers optimistic.

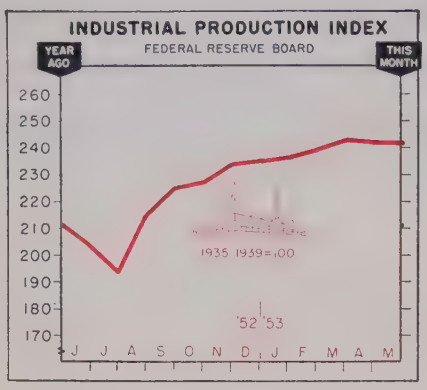
Future Smiles—On the other hand there are many people who feel that a settlement in Korea would result in a business tumble. It is a distinct possibility, however, that popular rejoicing following an agreement could put a smile on many a solemn face. Even a temporary feeling of exultation might bring about a loosening up of the consumer's grip on his purse. Perhaps this hold is already weakening; at least some signs point to this occurrence.

Stable Factors—Among the signs pointing toward increased consumption are the component factors of STEEL's industrial production index. The production of steel continues at near capacity and the American Iron & Steel Institute estimates that furnaces poured about 2,226,000 net tons of steel for ingots and castings during the week ended June 20. Electric energy output has been more than 10 per cent above a year ago for some time. In the week ended June 6, the Edison Electric Institute reports distribution of 8,096,330,000 kilowatt-hours of electricity. Loadings of railroad revenue freight totaled 775,489 cars during the week ended June 6, according to the Association of American Railroads. For the last eight weeks car loadings have remained near this level.

Still Strong—The high level of these bellwethers of industry is reflected in STEEL's industrial production index for the week ended June 13. During this week STEEL's indicator moved up five points from the previous week to 232 per cent of the 1936-1939 average. This is 92 points above the strike-ridden week of June 14, 1952.

Loose Purse Strings

Although consumers received more money in the first quarter of 1953 than ever before, they were spending their money at a faster

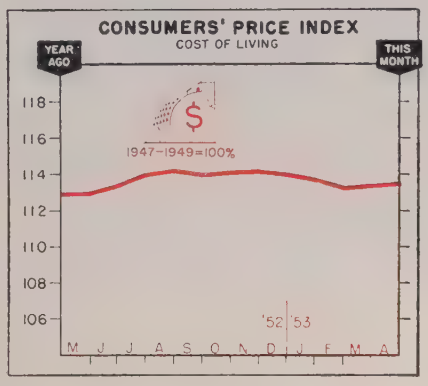


Industrial Production Index

1935-1939=100

	Total Production 1953	Total Production 1952	Iron, Steel 1953	Iron, Steel 1952	Non-ferrous 1953	Non-ferrous 1952
Jan.	236	220	287	261	249	215
Feb.	240	222	290	261	259	217
Mar.	243	220	297	262	261	218
Apr.	242	216	292	245	264	218
May	242	211	...	245	...	220
June	...	203	...	142	...	212
July	...	193	...	141	...	201
Aug.	...	215	...	241	...	212
Sept.	...	225	...	267	...	221
Oct.	...	227	...	276	...	228
Nov.	...	234	...	283	...	240
Dec.	...	235	...	287	...	245
Avg.	...	218	...	243	...	220

Federal Reserve Board

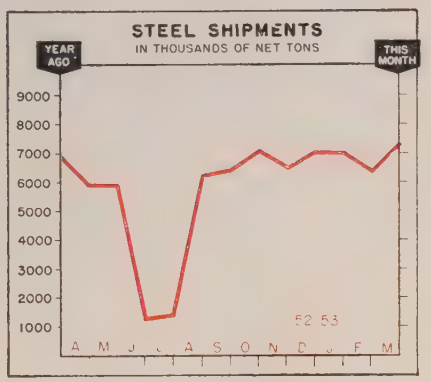


Consumer Price Index

(1947-1949=100)

	1953	1952	1951
Jan.	113.9	113.1	108.6
Feb.	113.4	112.4	109.9
Mar.	113.6	112.4	110.3
Apr.	113.7	112.9	110.4
May	...	113.0	110.9
June	...	113.4	110.8
July	...	114.1	110.9
Aug.	...	114.3	110.9
Sept.	...	114.1	111.6
Oct.	...	114.2	112.1
Nov.	...	114.3	112.8
Dec.	...	114.1	113.1

U. S. Bureau of Labor Statistics

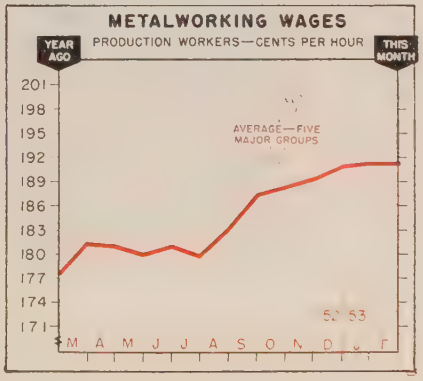


Steel Shipments

Net Tons

	1953	1952	1951
Jan.	7,067,636	6,589,193	6,904,688
Feb.	6,533,227	6,358,293	5,776,229
Mar.	7,436,919	6,890,391	7,105,078
Apr.	...	5,922,173	6,634,510
May	...	5,947,450	6,938,708
June	...	1,250,243	6,645,897
July	...	1,413,672	5,988,574
Aug.	...	6,312,118	6,755,589
Sept.	...	6,542,147	6,207,491
Oct.	...	7,155,611	6,844,093
Nov.	...	6,647,725	6,509,048
Dec.	...	7,105,382	6,411,105

American Iron & Steel Institute



Metalworking Wages

(cents per hour)

Production Workers—Five Major Groups

1952	Prim. Mtls.	Fab. Prod.	Mach-inery	Elec. Mchy.	Trans. Equip.
Feb.	184.1	170.5	182.8	168.1	191.4
Mar.	184.9	171.3	183.9	169.7	193.9
Apr.	183.4	171.1	183.7	169.6	192.8
May	184.1	171.8	184.3	169.7	193.6
June	183.0	171.6	184.7	170.5	194.4
July	182.0	170.0	183.8	170.2	192.1
Aug.	192.5	173.2	184.9	170.8	194.5
Sept.	199.3	176.8	187.2	172.1	201.8
Oct.	198.2	178.5	188.4	173.0	204.2
Nov.	199.8	179.6	190.2	173.3	204.7
Dec.	201.1	181.5	192.4	173.9	205.9
1953					
Jan.	203.8	181.6	192.7	175.6	203.6
Feb.	198.2	182.3	193.5	177.9	205.5

U. S. Bureau of Labor Statistics

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....June 15	Gear Sales .....May 18	Ranges, Elec. .....Apr. 13
Durable Goods ....May 4	Gray Iron Castings.June 8	Ranges, Gas .....May 18
Employ., Metalwk..May 4	Ironers .....Apr. 13	Refrigerators .....May 18
Employ., Steel ....June 1	Machine Tools ....Apr. 27	Steel Castings ....June 8
Fab. Struc. Steel..June 15	Malleable Castings.June 8	Steel Forgings ....June 8
Foundry Equip. ...June 1	Prices, Wholesale ..June 1	Vacuum Cleaners...May 11
Freight cars .....June 15	Pumps .....June 1	Washers .....May 11
Furnaces, Indus. ..June 15	Radio, TV .....May 25	Water Heaters ....May 11

rate. Income, which they had full power to dispose of in any way they saw fit, reached a seasonally adjusted annual rate of $245.6 billion, according to the Office of the Economic Adviser to the President. In purchasing goods and services, consumers were spending this money at the rate of $226.2 billion. And they were buying durable goods at a faster rate than non-durables.

Sales Are Strong

Viewed from another angle, the increased purchases of goods and services provides a strong indication that sales are increasing at a faster rate than the much talked about increase in inventories. In many industries, particularly manufacturing, the inventory-sales ratios are the lowest they have been in over a year.

Savings Rise

As a result of their increased spending, the savings rate of consumers has dropped. In that connection a closer look at savings, as reported by the member banks of the Federal Reserve System, reveals that the amount of money held in time accounts is increasing at a faster rate than it did in 1952. As of May 30 there were $18,354 million in savings accounts at member banks. This is $1.1 billion more than the same deposits in January of this year. In all of 1952 the increase amounted to only $1.2 billion. Even though the savings rate has decreased, many people have managed to increase their accounts. When this money is spent it should make quite a dent in inventories.

Borrowing Reduced

The rate at which consumers borrowed money declined sharply during the first quarter. It increased $5.6 billion during 1952 and according to preliminary figures it has risen only a little over $150 million during the first three months of the year.

During 1952, commercial, industrial and agricultural loans rose $1.8 billion. The first quarter of 1953 has shown an increase of only $400 million. In the week ended June 3, according to the Fed-

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	99.5	100.0	13.0
Electric Power Distributed (million kwhr)	8,245	8,096	7,126
Bituminous Coal Output (daily av.—1000 tons)	1,521	1,471	1,264
Petroleum Production (daily av.—1000 bbl)	6,390[1]	6,409	6,149
Construction Volume (ENR—millions)	$368.7	$215.2	$243.9
Automobile, Truck Output (Ward's—units)	166,527	134,619	130,574
TRADE			
Freight Car Loadings (unit—1000 cars)	780[1]	775	684
Business Failures (Dun & Bradstreet, number)	190[1]	217	175
Currency in Circulation (millions)[3]	$30,003	$29,980	$28,830
Dept. Store Sales (changes from year ago)[3]	+6%	0%	+9%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,014	$16,915	$15,108
Federal Gross Debt (billions)	$267.3	$266.7	$260.2
Bond Volume, NYSE (millions)	$16.6	$19.8	$18.5
Stocks Sales, NYSE (thousands of shares)	7,285	6,535	6,177
Loans and Investments (billions)[4]	$76.0	$75.9	$73.7
United States Gov't. Obligations Held (billions)[4]	$29.1	$28.8	$31.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	182.82	182.82	171.92
STEEL's Nonferrous Metal Price Index[6]	224.7	224.0	223.7
All Commodities[7]	109.6	109.7	111.2
All Commodities Other Than Farm and Foods[7]	113.5	113.5	112.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

eral Reserve Board, commercial, industrial and agricultural loans declined $146 million from the previous week. It is to be noted, however, that manufacturers of metal and metal products enlarged their loan indebtedness $13 million during this weekly period. Furthermore, with money tight, the banks are resorting to the sale of government securities to increase their loanable funds.

Better Money

With production on a high level, income and consumption increasing and loans harder to obtain, the fact that the purchasing value of the dollar in April had risen 0.4 per cent in a year is of real significance. Although, the purchasing value of the dollar is only 55.8 cents (1939 = 100), the rise in value means that people can buy more things.

Expect High Output

Increased production accompanied by a decline in the backlog of orders is in the offing, shows a survey by the Purchasing Agents Association of Chicago. Higher wages and transportation costs are combining to bring about higher prices. The steel wage settlement has, as was expected, brought about a general increase in steel prices. However, on looking back over the year, the fact that the previous wage settlement, even with a greater wage boost, did not result in an inflationary spiral should inspire confidence in the future of the economy.

Trends Fore and Aft

Cash dividend payments by corporations in May dropped 6 per cent below a year ago to $222 million . . . April shipments of steel barrels and drums were 200,000 below April, 1952 . . . Shipments in April of aluminum wrought products were 37 per cent above a year ago . . . Shipments of magnesium wrought products in April were 20 per cent above the previous April . . . Factory shipments of domestic water systems in April were 3390 units above the same month in 1952 . . . Over 2.1 million TV sets and 1.8 million radios have been sold to consumers in the first four months of 1952 . . . Housing starts in May were down 2600 units from a year earlier . . . Bank clearings in the week ended June 10, were 6 per cent greater than the same week a year earlier . . . Department store sales for the week of June 6 were 6 per cent greater than a year ago.

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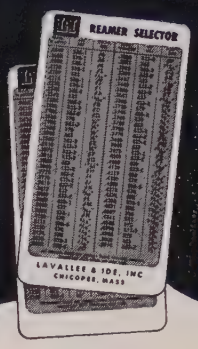

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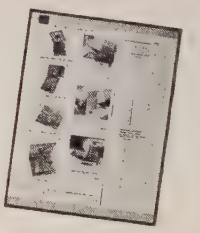

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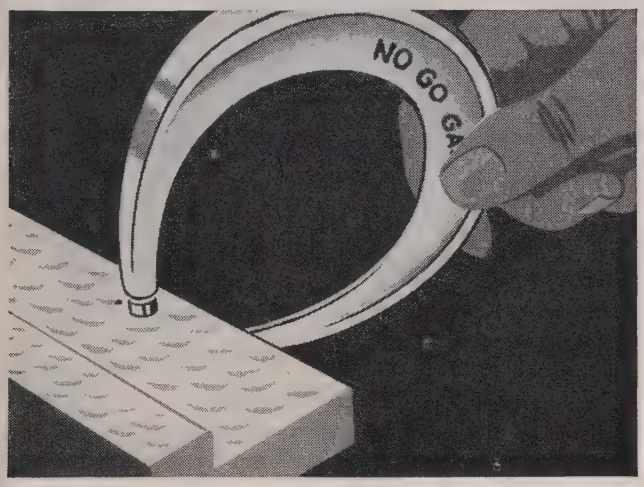
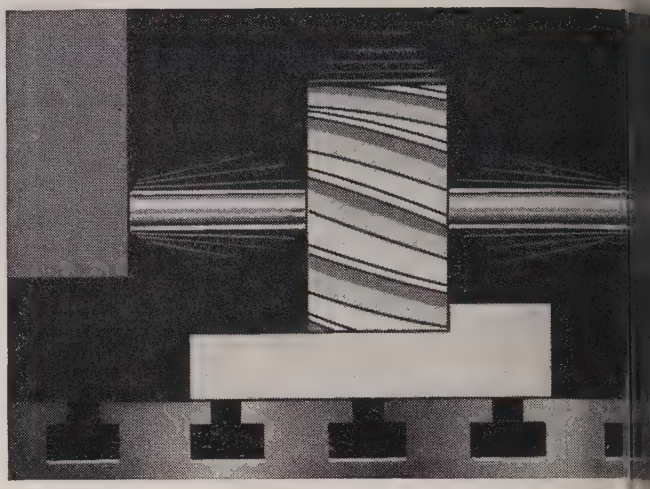
HOW TO END DAMAGED WAYS, PRODUCTION LOSSES

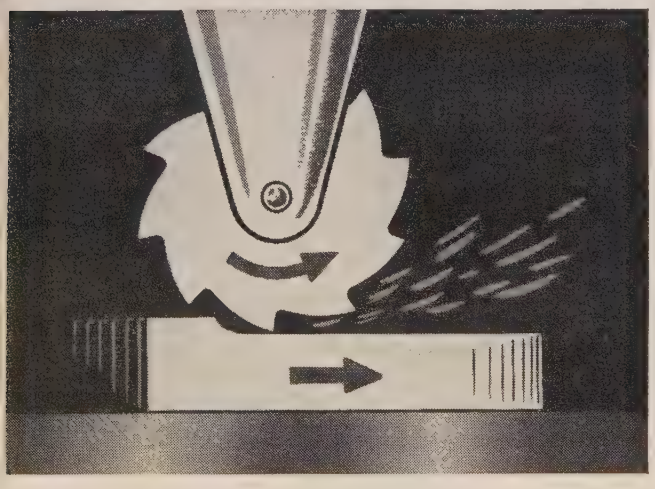
Sunoco Way Lubricant Stops "Jumpy Table"



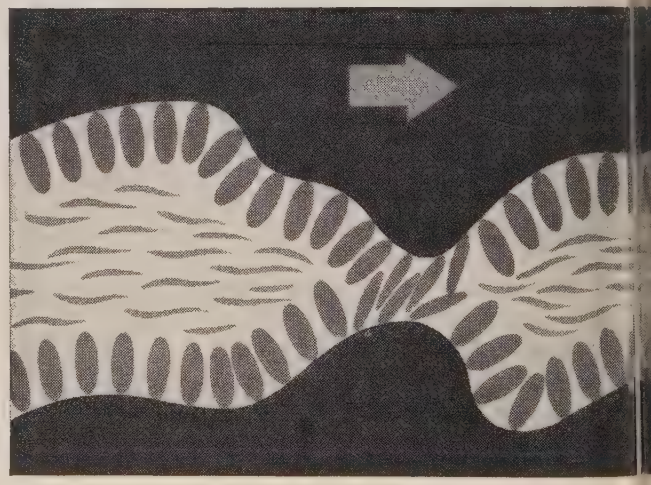
Tool chatter and jumpy table are machining headaches. Too often they cause poor surface finish, failure to hold tolerances, production losses.



Tool chatter is a result of a lack of rigidity in either the machine or the set-up. It is a mechanical problem and no lubricant can lick it.



Jumpy table is a stick . . . slip . . . stick . . . slip action of the table. It is a lubrication problem. Though just as damaging as tool chatter, it is not always detected when the cause of poor surface finishes.



Extreme magnification

Sunoco Way Lubricant cures jumpy table. It contains special compounds that form a film, like the nap of a rug, on the sliding surfaces and minimize the force of both static and kinetic friction.

Why take a chance of damaging your ways? These integral parts of the base casting for your machine are difficult to refinish and costly to replace. For information about Sunoco Way Lubricant, call a Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. S-6.

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY

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Men of Industry

RICHARD G. RAY
. . . General Controls v. p.-mfg.

Richard G. Ray was named vice president in charge of manufacturing at **General Controls Co.**, Glendale, Calif.

At **Thor Power Tool Co.**, Aurora, Ill., **J. A. Hill** was made vice president and sales manager. **John A. McGuire**, chairman of the executive committee, takes on additional duties of vice president in charge of labor relations. Also elected vice presidents are **B. H. Johns** who will head rock drill sales, and **W. B. Hunn**, Los Angeles Works.

Thomas Wolfe, president, **Pacific Airmotive Corp.**, Burbank, Calif., was elected chairman of the board succeeding **Arthur C. Stewart**, resigned. **H. H. Greenwald** was appointed treasurer and assistant to the president. **Edward Farmer** was elected vice president-manufacturing.

A. C. Reppenhagen is the new president of **Mid-West Abrasive Co.**, Owosso, Mich. **L. P. Jackson** continues with the company as chairman of the board.

Kenneth V. Lutz was appointed general field manager, **All-State Welding Alloys Co. Inc.**, White Plains, N. Y. Since joining the company in 1948, he has been regional manager for 11 western states and Hawaii.

A. A. Potter, dean of engineering, **Purdue University**, LaFayette, Ind., has retired. He will devote half of his time during the next year as president of Bituminous Coal Research, and part time to consulting practice.

Frank X. Gilg was made an executive assistant in the boiler division of **Babcock & Wilcox Co.**, New York.

Norman W. Foy was elected vice president in charge of sales, **Republic Steel Corp.**, Cleveland, and **L. S. Hamaker** was made general manager of sales. Mr. Foy, former general sales manager, succeeds **J. M. Schlendorf**, who retires July 1 from the sales vice presidency but remains with Republic in a consulting capacity on sales problems. **S. A. Crabtree** and **R. W. Himes** become assistant general managers of sales. Mr. Hamaker served for a number of years as general manager of the Berger Mfg. Division and in 1942 was appointed assistant general manager of sales for Republic. Mr. Foy, during World War II, served with War Production Board as director of the steel division. He returned to Republic in 1945 and in 1951 was recalled to Washington as assistant administrator of National Production Authority.

Aircraft Metal Forming Co. Inc., Burbank, Calif., appointed **R. F. Baird** vice president and general manager and **Seibly S. Buffum** sales manager.

F. W. Thayer was made works manager in charge of foundry operations for **Gunite Foundries Corp.**, Rockford, Ill. He succeeds **C. B. Paden**, retired.

Dudley J. Kingman was made manager of the Cleveland factory branch of **Fruehauf Trailer Co.** **Robert E. Baxter** was appointed truck bodies and special equipment sales manager for the company.

Raymond E. Scheubel has joined the method and planning department of **General Dynamics Corp.'s** electro dynamic motor and generator division, Bayonne, N. J., as a tool design specialist. **James J. Becher** was named a sales engineer for the division at Chicago.

Phillip R. Heim was elected to the board of directors and appointed vice president in charge of manufacturing at **Vard Inc.**, Pasadena, Calif.

Motor Products Corp., Detroit, named **Berton E. Rogers**, assistant to the president, as vice president in charge of manufacturing for the automotive division. He will be responsible for manufacturing, en-

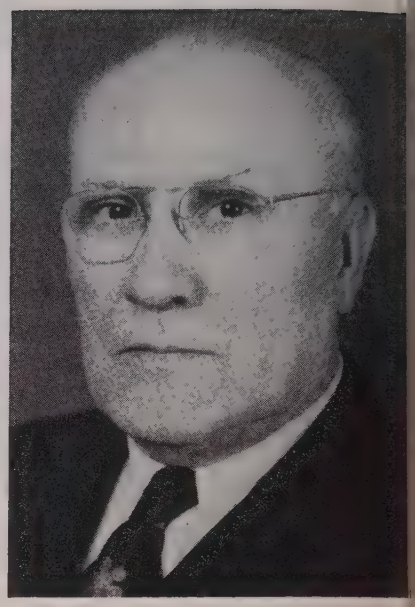
NORMAN W. FOY

L. S. HAMAKER

. . . sales promotions at Republic Steel

E. E. MOORE
. . . new post with U. S. Steel

JESSE J. BAUM
. . . supervisor, American Cast Products



CARL P. BROCKWAY
. . . heads Asbestos Mfg. Co.

gineering and labor relations in all three Detroit plants and the Marion, O., division.

E. E. Moore was appointed assistant to president and vice president, **United States Steel Corp.**, Pittsburgh. He has been corporation vice president, industrial relations-administration.

H. H. Gorrie, assistant chief engineer, **Bailey Meter Co.**, Cleveland, was appointed chief engineer, directly in charge of the company's engineering activities.

J. A. Shimmin was elected vice president in charge of operations at **Rotary Electric Steel Co.**, Detroit.

Engineering & Research Corp., Riverdale, Md., promoted **Richard M. Faulconer** to group engineer, salvage and liaison group. **Jerry Silberstein,** who organized the salvage and liaison group in 1947, was named project engineer for flight simulator production. **D. G. Lehman** was promoted to senior buyer, directing the company's electronic procurement group.

Charles F. B. Price Jr. was appointed sales engineer for wire rope products, **Columbia-Geneva Steel Division,** U. S. Steel Corp., Pittsburg, Calif.

Gordon Grand Jr. was made assistant to the president of **Olin Industries Inc.** He will be located at the New York office. The appointment is effective July 1.

Jesse J. Baum, foundry and industrial executive, was appointed supervisor of **American Cast Products Inc.**, Orrville, O., subsidiary of Hagan Corp. Mr. Baum recently completed special work on military tanks at American Steel Foundries.

William R. Patton joined **New Holland Machine Co.**, New Holland, Pa., as purchasing agent. New Holland is the farm machine subsidiary of Sperry Corp. Mr. Patton formerly was with Argus Camera Inc.

Charles W. Casgrain II and **E. E. Saperston** were named new members of the board of **Mechanical Handling Systems Inc.**, Detroit.

Charles M. Heath was appointed assistant to the director of industrial relations, **Kaiser Steel Corp.**, Fontana Works, Fontana, Calif.

Owen McWilliams was named assistant secretary, **American Machine & Foundry Co.**, New York.

Robert B. Humphrey was appointed assistant manager of the Wayne, Mich., plant and **Joseph N. Locatell** assistant manager, Metuchen, N. J., plant of **Lincoln-Mercury Division,** Ford Motor Co.

Mike Miller was placed in charge of all activities connected with joint venture work in which Kaiser Engineers Division of **Henry J. Kaiser Co.** is interested. Mr. Miller, a vice president of Henry J. Kaiser Co., has headquarters in Oakland, Calif.

Thermoid Co., Trenton, N. J. elected **Carl P. Brockway** president and director of its subsidiary **Asbestos Mfg Co.**, Huntington, In. Mr. Brockway is a vice president of Thermoid and formerly was in charge of friction division manufacturing at the company's main plant in Trenton. **A. K. Runk** was made superintendent, friction division, to succeed Mr. Brockway.

S. T. Williams, formerly manager of engineering, military division Continental Motors Corp., was made works manager of **Rosan Inc.** Newport Beach, Calif.

Sawhill Mfg. Co., Sharon, Pa., appointed **Arthur G. Gough** district sales manager at St. Louis.

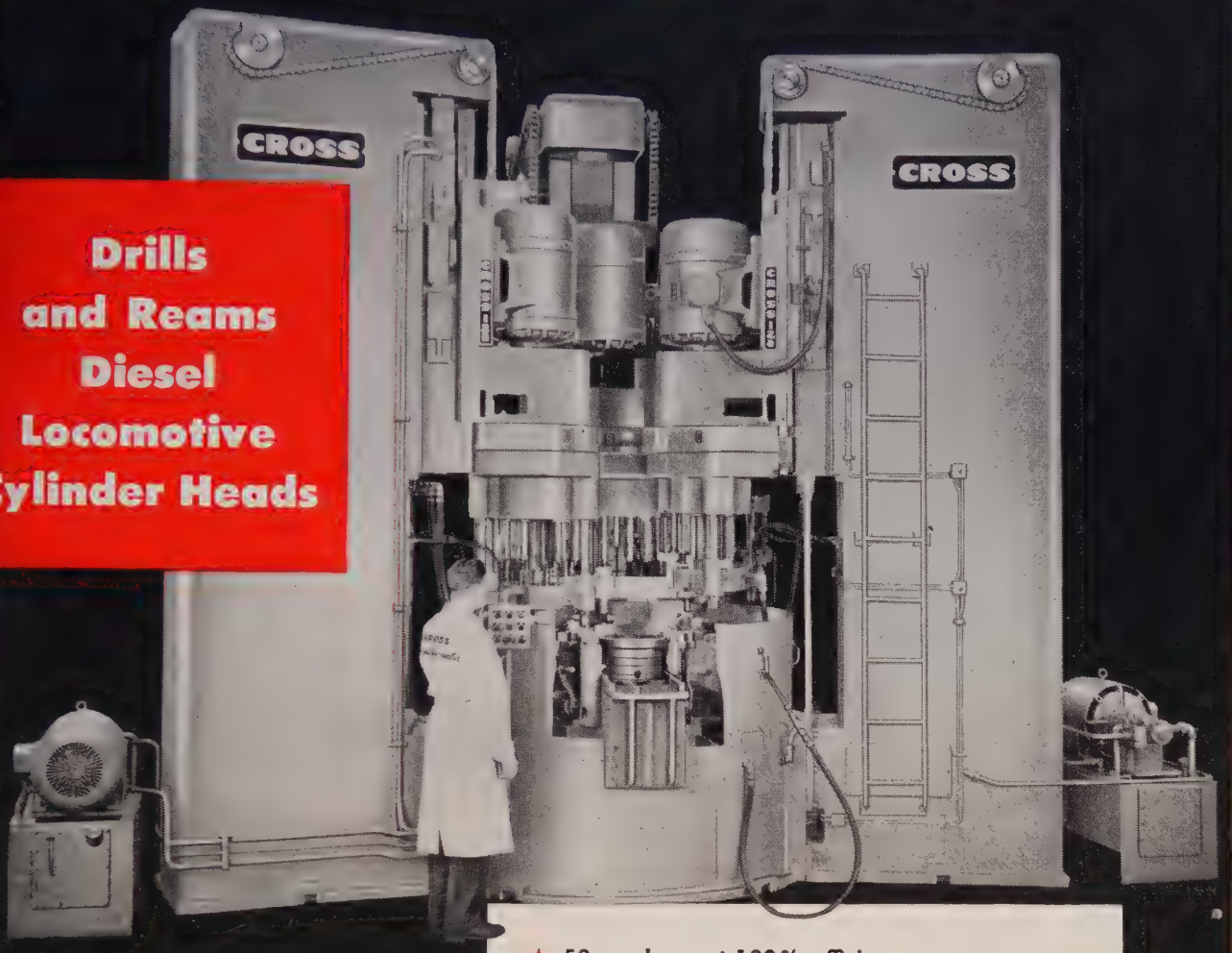
Joseph T. Galvin was made sales manager, plastics division, **Fabricon Products Inc.** He will have headquarters in the company's general offices in River Rouge, Mich.

James E. Young and **John A. Evans** were promoted to purchasing agents of **Servel Inc.**, Evansville, Ind. Mr. Young is in charge of all custom-made parts, and Mr. Evans of all standard and miscellaneous parts. **William K. Johnson** was named subcontracts manager, and **Frank A. Kalkbrenner** was promoted to supervisor of purchasing services.

Neil F. Meredith joined **Basic Refractories Inc.**, Cleveland, as technical assistant to Dr. Max Mullen vice president-operations and engineering. Mr. Meredith formerly

Another Special by Cross

Drills and Reams Diesel Locomotive Cylinder Heads



- ★ 50 per hour at 100% efficiency.
- ★ Seven stations: one, load and unload; two, drill 13 holes; three, drill 11 holes and spotface one hole; four, drill 12 holes; five, drill two holes, core drill three holes and chamfer three holes; six, ream nine holes, chamfer six holes and form two spherical seats; seven, ream nine holes, chamfer one hole and form two spherical seats.
- ★ Fluid motor driven index table.
- ★ Construction to Joint Industry Conference standards.
- ★ Other features—Hydraulic feed and rapid traverse, hardened and ground ways, automatic lubrication.

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DETROIT 7, MICHIGAN

Special MACHINE TOOLS

JOHN F. HALLER
. . . a v. p. of Allied Products

was ceramic engineer for the AC Spark Plug Division, General Motors Corp., where he engaged in research, production control and personnel work.

Allied Products Corp., Detroit, elected **John F. Haller** vice president of engineering, and **Eugene F. Wambold** vice president-general manager of its subsidiary, Michigan Powdered Metal Products Co. Inc. Mr. Haller was founder and president of the subsidiary company until it was acquired by Allied in 1951. Mr. Wambold joined the powdered metal company in 1952. He served previously with General Electric Co. as vice president in charge of manufacturing of Carboloy Department.

S. J. Sindeband was elected president of **Mercast Corp.**, New York. Mr. Sindeband, who advances from executive vice president, is also president of Alloy Precision Castings Co., Cleveland.

Wilson E. Arthur was made an assistant to C. R. Draney, vice president, **Bechtel Corp.**, San Francisco.

William Davies, manager of stores and materials and formerly purchasing agent for **Dominion Foundries & Steel Ltd.**, Hamilton, Ont., retired after 35 years with the company.

I. H. Nye, treasurer, **General Controls Co.**, Glendale, Calif., was elected to the board of directors of the company.

EDWARD G. BUSCHOW
. . . new president of Fab-Cor

Edward G. Buschow was elected president and manager of sales engineering of **Fab-Cor Inc.**, Pittsburgh. He has been with Surface Combustion Corp. for 28 years, most recently district manager of industrial sales in Pittsburgh.

Douglas B. Martin was elected vice president in charge of sales, Amplex Division, **Chrysler Corp.**, Detroit. **Karl H. Kuhlen** becomes division sales manager.

Wilmot F. Wheeler Jr. was named assistant to the president, **American Chain & Cable Co. Inc.** and associate companies, with headquarters in New York. He has been with the company for the last two years, on special assignments.

WILMOT F. WHEELER JR.
. . . new post with American Chain

STUART H. LANE
. . . American Art Works president

Stuart H. Lane, formerly vice president, was elected president and general manager, **American Art Works Inc.**, Coshocton, O., producer of advertising metal signs and displays.

Edgcomb Steel Corp., Hillside, N. J., appointed **John J. McGonagle** manager of steel sales.

Wayne Hill was appointed manager of the factory branch of **Trailmobile Inc.** in Los Angeles.

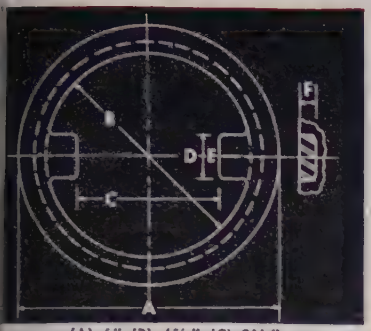
John T. Brown was elected president and chief executive officer of **J. I. Case Co.**, Racine, Wis. He succeeds **Theodore Johnson**, resigned as president and elected vice chairman. Mr Brown has been executive vice president since 1952.

Harold J. Mink was appointed cost analyst and executive assistant, **Henney Motor Co. Inc.**, Freeport, Ill.

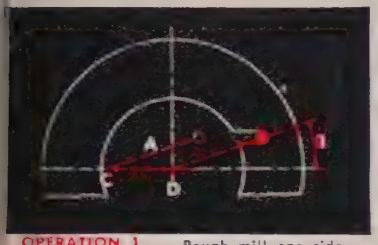
Clarence G. Rosensweig, former vice president and works manager, **Fafnir Bearing Co.**, New Britain, Conn., was made executive vice president with authority over all company divisions. **Richard F. Cooper** succeeds Mr. Rosensweig as vice president-works manager.

Harry T. Graham was named vice president, **General Refractories Co.**, Philadelphia. He was general sales manager, and he continues active supervision of the sales group in addition to his new duties. **Richard E. Longacre** was promoted to general sales manager. **Herbert F.**

Production time reduced by 53%!



(A) 6" (B) 45/8" (C) 3¼"
(D) —1" + ± .000
(E) —1" + ± .005 (F) ⅜"



OPERATION 1 — Rough mill one side of tongue.

PROCEDURE—Offset spindle slide radius (A), set rotary head to angle (B), feed table to work-piece centerline (C to D).

OPERATION 2 — Rough mill radius section between tongue.

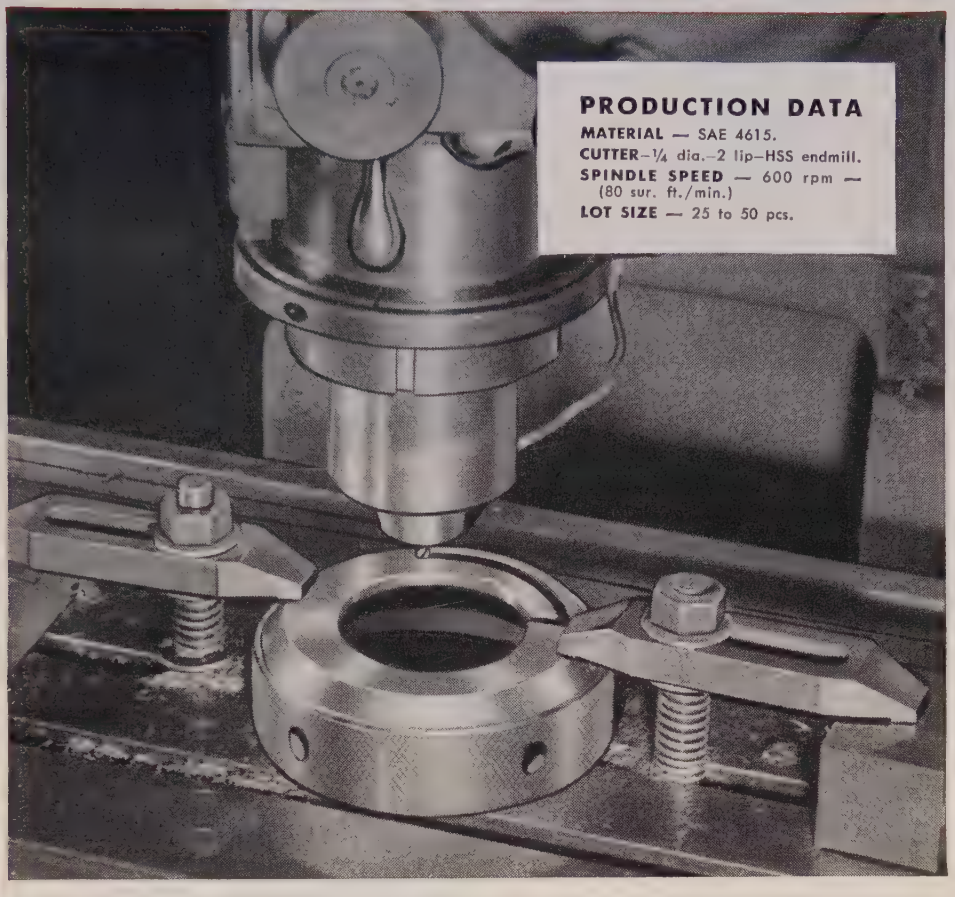
PROCEDURE — Rotate head from angle (B) to angle (E).

OPERATION 3 — Rough mill one side of opposite tongue.

PROCEDURE — Feed Machine table from (D) to (F).

OPERATION 4 — Rough mill end of tongue.

PROCEDURE — Feed machine saddle from (F) to (G).



PRODUCTION DATA

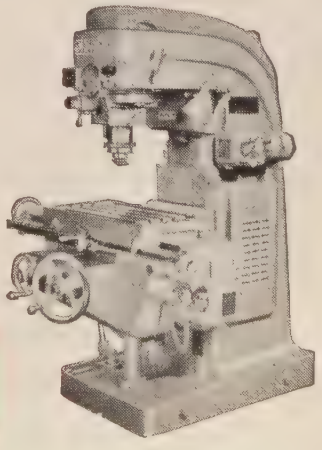
MATERIAL — SAE 4615.
CUTTER—¼ dia.—2 lip—HSS endmill.
SPINDLE SPEED — 600 rpm — (80 sur. ft./min.)
LOT SIZE — 25 to 50 pcs.

Rotary Head Milling Machine simplifies method, cuts costs on still another production job.

IN the production milling of this Quick Change Clamp Collar, considerable savings were effected by using a Kearney & Trecker No. 2 Model D Rotary Head milling machine. The entire milling operation on each piece required less than 16 minutes and still maintained the prescribed accuracy. Previous time was 34 minutes.

The job was done faster on the Rotary Head machine than would be possible with any other method. The radii were produced merely by offsetting the spindle slide and rotating the machine's head. The straight surfaces were milled by moving the table and saddle, both of which are independent of the head setting. Only one cutter was used in this single set-up. Think of what this means not only in this job, but also in terms of increased range of operations for other work.

Get the Rotary Head Milling Machine Production Idea Booklet. It contains several examples of how this method has been found exceptionally efficient in solving production problems. It's yours for the asking. Write Kearney & Trecker Corp., 6784 W. National Avenue, Milwaukee 14, Wisconsin.



OPERATION 5 — Rough mill second half of inner contour.

PROCEDURE — Repeat Operations 1 through 4, working area to be in the lower half of opening.

OPERATION 6 — Finish mill 4⅝" dia., end of tongues to 3¼" dimension and width of tongues to 1" + .000 —.005.

PROCEDURE—Reverse sequence of Operations 1 through 5.

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

pick the stainless that fits best

When selecting stainless steel be sure you pick the corre type for your particular application. For some grad resist corrosion better . . . others have superior heat res tant properties. Some are easier to machine . . . still oth can be more readily formed or welded.

In every case there is a grade of Crucible REZISTA Stainless Steel that is best suited to the job. And to he our customers select the type that will provide the b service for the lowest cost, we make available all the desig metallurgical, fabricating and application data we ha accumulated in our years of stainless steel experience wi many different industries.

Our staff of field representatives brings you the bene of our vast technical resources. And the quality REZISTAL Stainless Steel sheets, strip, plates, bars, wi forgings, castings and tubing produced in our mode integrated mills is unsurpassed in the industry. When y have an application for stainless, call Crucible.

CRUCIBLE first name in special purpose steels

53 years of *Fine* steelmaking

STAINLESS STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

LAURENCE C. JOHNSTON
. . . Brown Fintube v. p.

CHARLES W. CRAVENS
. . . Republic's open-hearth supt.

R. B. ATTRIDGE
. . . heads Ainsworth Mfg. div.

eene, formerly works manager, s made a vice president, and **rdon C. Fay** succeeds to the for- r position.

own Fintube Co., Elyria, O., ap- nted **Laurence C. Johnston** vice sident. He continues to man- e sales of heat exchangers and her Brown Fintube heat transfer uipment in the eastern territory th offices in New York. He ned Brown Fintube in 1949.

ppointments in the aviation gas rbine division, **Westinghouse ectric Corp.,** Philadelphia, in- ude **Hewett R. Arnold** as assist- t division manager; **Thomas A. aly** as manager of technical oper- ions; **Joseph F. Chalupa** man- ger of manufacturing for the outh Philadelphia plant; **James '. Fatkin** assistant to the divi- on manager; and **Vincent Gordon .** assistant manager of produc- on.

Charles W. Cravens was named open-hearth superintendent of **Republic Steel Corp.'s** Cleveland steel plant. He is succeeded as assistant superintendent of the open-hearth and electric furnace shop at Republic's South Chicago plant by **Erwin F. Franzen.** Mr. Cravens succeeds **Robert P. Carpenter,** recently appointed superintendent of the company's Massillon, O., plant.

Named assistant traffic managers of **Republic Steel Corp.,** Cleveland, are **Russell R. Clark** and **Charles F. Persch.**

R. J. Loskill, formerly manager, sales training division, was advanced to manager of sales development division, **Caterpillar Tractor Co.,** Peoria, Ill. He is replaced by **W. E. McCoy** who was assistant sales manager, central sales division. **J. G. Thacker** replaced **W. F. Jordan,** resigned, in the eastern division as assistant sales manager.

R. B. Attridge was appointed head of the manufacturing engineering division, **Ainsworth Mfg. Corp.,** Detroit. He has had previous experience in manufacturing engineering, having been with Budd Co. for 15 years and prior to that with Lustron Corp.

New officers announced for **Cambridge Wire Cloth Co.,** Cambridge, Md., include **Clarence E. Pink** as chairman of the board and chief executive officer. He is succeeded as president by **Edward N. Evans,** formerly vice president and general manager. **Irvin F. Pink,** formerly executive vice president, is now senior vice president. **Fred L. Hooper** becomes executive vice president, **Harold E. Pink** secretary and **Nina E. Pink** treasurer.

Harold W. Faint was made Chicago district sales manager for the metal finishing division of **Frederic B. Stevens Inc.**

OBITUARIES . . .

. Leslie Beattie, 62, vice president nd general manager of Canadian perations of **International Nickel o. of Canada Ltd.,** Toronto, died une 10.

Harold E. Russell, 53, assistant ales manager, **A. Schrader's Son Division,** Scovill Mfg. Co. Inc., Brooklyn, N. Y., died June 11.

Frederick C. Teuteberg, 52, treasurer, **United States Steel Supply Division,** U. S. Steel Corp., Chicago, died June 12.

Joseph A. Pardi Sr., 68, president, **American Seal & Stamp Co.,** Chicago, died June 12.

Gail E. Barr, 56, superintendent of the Natrona, Pa., plant, **Pennsylvania Salt Mfg. Co.,** died June 6.

Harry I. Askew, 62, Detroit district manager, Universal Division, **Universal-Cyclops Steel Corp.,** died May 31.

Jack H. Steckla, 36, general superintendent, **Pittsburgh Forgings Co.'s** Jackson, Mich., plant, died June 1.

Benjamin W. Sprau, 64, assistant sales manager, **Erie City Iron Works,** Erie, Pa., died June 6.

Harry J. Kelly, former vice president, **Dominion Iron & Steel Corp.,** died June 6 in Sydney, N. S.

Stephen P. Foster, 65, former economist, **Norton Co.,** Worcester, Mass., died May 26.

Payoff on Improvements

De Laval puts full steam behind modernization, raises productivity 16 per cent

PUMPING MONEY into capital improvements at the highest rate in five years, De Laval Steam Turbine Co., Trenton, N. J., is demonstrating its belief that capital goods producers have little cause for business pessimism.

It's also setting a good example for its customers—basic industries ranging from blast furnaces to shipbuilding use De Laval's turbines, centrifugal pumps, speed reducers, blowers and compressors. Deliveries by the company this year will be higher than last, though incoming orders have slowed down a bit and backlog is beyond its crest, reports J. P. Stewart, president. Key suppliers of components are generally filled up with work, particularly those producing alloy castings, steel forgings and weldments.

On the Go—Embarked on an ambitious engineering program, De Laval follows a philosophy of preparing for the future by developing new products and processes and improving existing ones. One result of the program: Company productivity—dollars shipped per direct labor hour—was stepped up 16 per cent last year. Significant recent developments of the company include a centrifugal compressor for gas pipelines and a high pressure turbo-supercharger for diesel engines.

Located in the booming Delaware river valley, De Laval has passed the peak of the labor shortage successfully. One device employed is an incentive system for direct hourly workers. Another is recalling of retired machinists as instructors for in-plant training programs. Number of old hands in use is shown by this statistic: Ten per cent of the company's 2100 employees are members of its 25-year club.

A Look Ahead—The new administration's "enlightened attitude toward depreciation," tax reform and reduced spending will be stimuli for capital goods people, says Mr. Stewart. Like a lot of industry men, he welcomes the fact that "we're back in a buyer's market and will have to sell our wares. This will separate the men from the boys quickly." Will a truce hurt business? Mr. Stewart speaks for all capital goods producers when he sums up: "God help us if we have to depend on Koreas to keep going."

Brown-Wales Builds Warehouse

Brown-Wales Co., Cambridge, Mass., constructed a second warehouse, immediately adjoining the one completed in 1950. It is devoted to plates exclusively.

Lawn Mower Plant Moved

Pennsylvania Lawn Mower Division, American Chain & Cable Co. Inc., moved to a new plant on Stevens lane, Exeter, Pa.

Tool Steel Firm Names Agent

Columbia Tool Steel Co., Chicago Heights, Ill., appointed A. J. Rod Co. Inc., Houston, as sales representative in the Texas territory.

Screw Products Firm Expands

H & H Screw Products Inc., Buffalo, is constructing an addition to double the size of its plant. The firm also is spending about $75,000 for new equipment at once and plans to spend another $45,000 during the rest of the year. Samuel D. Horowitz is president.

Graver Tank Opens Texas Plant

Graver Tank & Mfg. Co. Inc., East Chicago, Ind., established a plant at Odessa, Tex. This fabricator of steels and alloys is an important supplier of process and storage equipment for the petroleum and chemical industries.

Industrial Tape Changes Name

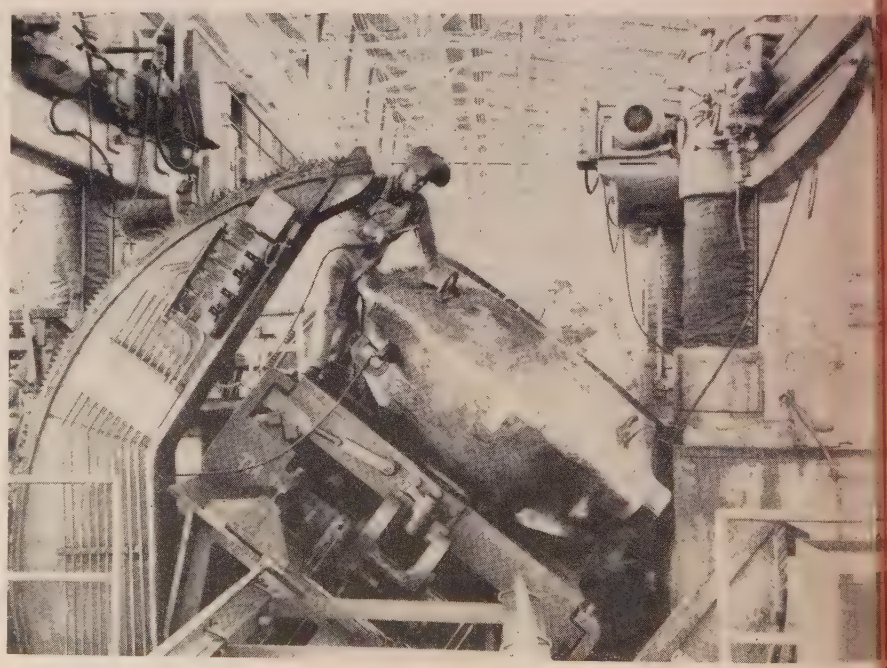
Industrial Tape Corp., New Brunswick, N. J., manufacturer of pressure sensitive tapes, changed its corporate name to Permacel Tape Corp.

Birkenstock Heads Association

J. M. Birkenstock, general manager of Green Fuel Economizer Co. Inc., Beacon, N. Y., was elected president of National Association of Fan Manufacturers Inc., Detroit. R. A. Wasson, vice president and general manager of Clarage Fan Co., Kalamazoo, Mich., was elected vice president of the group. L. C. Monroe is secretary-treasurer of the association.

Thor Buys Enameling Firm

Thor Corp., Chicago, acquired Century Vitreous Enamel Co., this city, and will operate it as a wholly owned subsidiary. Officers of the



Wide World

Tank Tilter Aids Welding

Fixtures like this, which tilt an entire tank hull to the best work position, help simplify the job of making 49-ton Army tanks at a plant in Grand Blanc, Mich. Here a worker prepares to arc weld a spot on the hull of a tilted tank

When you use a power drive which is an assembly of motors, pulleys and belts, chains and sprockets, gearing, speed reducers, etc., you waste time and money in purchasing, handling and assembling these various units into the final drive.

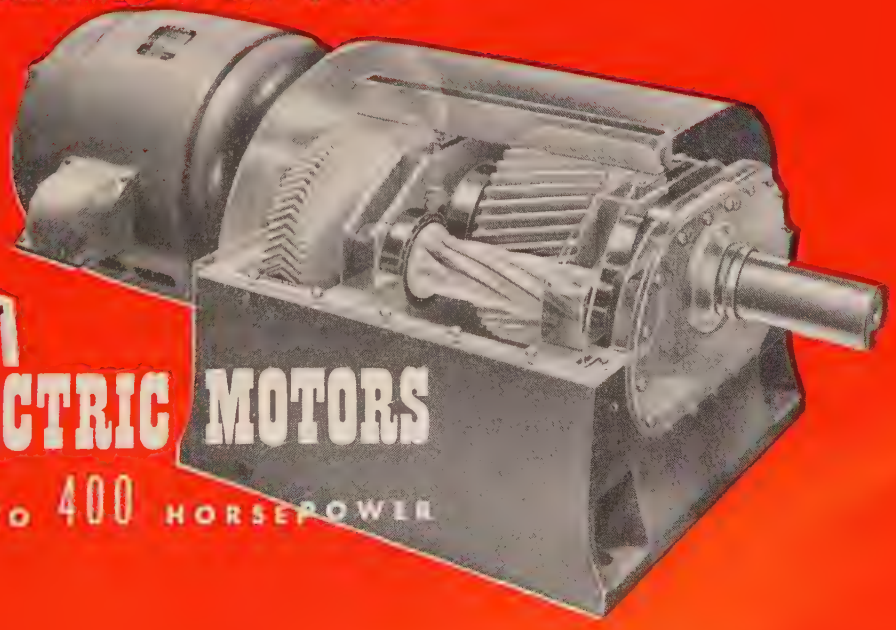
Master power drives designed as complete units with component parts matching size for size and rating for rating offer you considerable saving in space and money . . . especially in the larger sized units.

best for the BIG ones too

So don't put up with "make-shift" assemblies when you can select from Master's broad line, standard units which easily combine to give you the RIGHT horsepower, the RIGHT shaft speed, the RIGHT features in one compact unit that you can use RIGHT where you want it.

Use the RIGHT power drive to increase saleability of your motor driven products . . . improve the economy, safety, and productivity of your plant equipment. That's the horsesense way to use horsepower.

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



MASTER

ELECTRIC MOTORS

1/8 TO 400 HORSEPOWER

Taconite Mining Speeded

Jet-piercing machine, used to mine Mesabi taconite ores, makes holes much faster than steel churn bits previously used. Flaming gases disintegrate the rock to bore the hole. An International stake truck, shown with the machine, transports fuel

subsidiary are: G. N. Sirovy, president; H. C. Buckingham, vice president; V. F. Melin, secretary-treasurer; A. M. Krause, assistant secretary-treasurer.

Tool Firm Names Representative

Alpha Tool & Supply Co., Closter, N. J., importer of British-made machine tools and manufacturer of self-setting clamps, appointed Geo. A. Rieke Co., Chicago, as its representative.

American Lava Changes Hands

Minnesota Mining & Mfg. Co., St. Paul, purchased American Lava Corp., Chattanooga, Tenn., and will operate it as a wholly-owned subsidiary. American Lava produces electrical insulating material, crucibles, nozzles and chemical-resistant fittings.

Buffalo Ore Dock Closed

Pennsylvania Railroad ore dock in the Union canal, Buffalo, has been closed following use by Bethlehem Steel Co. as an ore storage point for nearly 20 years. The contract between the railroad and its operating corporation, Erie Coal Dock Co., has been terminated by Bethlehem. There was no indication as to what disposition would be made of the property which has a valuation of $1,420,740, including equipment.

Triangle Steel Opens Plant

Triangle Steel & Supply Co., Los Angeles, opened a plant and warehouse at Bandini boulevard and Downey road. Alan F. Zalk is manager.

What an Incentive!

ONE year's vacation with pay is in store for employees of Hedco Mfg. Corp., Chicago, manufacturer of radios and phonographs. They will be eligible for this benefit after every ten years' service.

Since all employees were hired in 1951 when the company moved to Chicago from Mt. Vernon, N. Y., none will be eligible for at least eight more years. But in the meantime they can enjoy their annual vacations of one to two weeks, as well as prospects of a year-off-with-pay period.

The provision is contained in a contract negotiated by officials of the corporation and the union, International Brotherhood of Electrical Workers, AFL. The union hopes to win the same terms in contracts with other firms.

The unique vacation program is expected to reduce turnover of employees to a minimum.

Garlock Packing Moves Branch

Detroit office of Garlock Packing Co., manufacturer of mechanical packings, moved to larger quarters at 2781 E. Grand Blvd. Status of the office was changed from that of a sub-branch reporting to Garlock's Cleveland office to that of a district office reporting directly to the main office in Palmyra, N.Y.

Duplicon Co. Enlarges Plant

Duplicon Co., Westboro, Mass., is constructing a plant addition. The firm turns out stamped parts for electronics equipment and machinery makers.

New Frit Developed

Du Pont product for coating aluminum will be made and sold by Ferro Corp.

FERRO CORP., Cleveland, large supplier of porcelain enameling frits, will manufacture and sell a new frit especially developed by E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., for the coating of aluminum. Du Pont researchers have developed a method of meeting the lower melting requirements of aluminum enamel coating—about 1000° F as compared to standard frits, used on steel, which are processed at around 1500° F.

Many new architectural and industrial uses for porcelain enamel aluminum will open up as the metal acquires wider availability, C. D. Clawson, Ferro president, believes. "New needs for ceramic coatings for colors, corrosion resistance, abrasion, thermal shock, impact and flexing, as well as ease of fabrication already have been expressed widely by builders and industrialists," he says.

Torrington Renames Division

Torrington Co., Torrington, Conn., renamed its division in Coventry, England, Torrington Co. Ltd. Formerly known as Coventry Swaging Co. Ltd., the division makes bicycle, motorcycle and automobile spokes; sewing machine needles; nuts, bolts, screws and other machine parts. The Torrington needle bearing is also produced in Coventry for users in the British territory.

Grants Iron Prospecting Rights

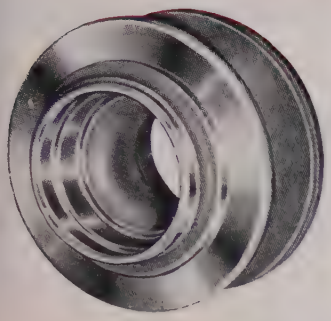
Premier Duplessis announced the Quebec government has adopted an order in council giving Fenimore Iron Mines Ltd., Montreal, prospecting rights in the LacAux Feuilles area, on the west coast of Ungava bay in northern Quebec.

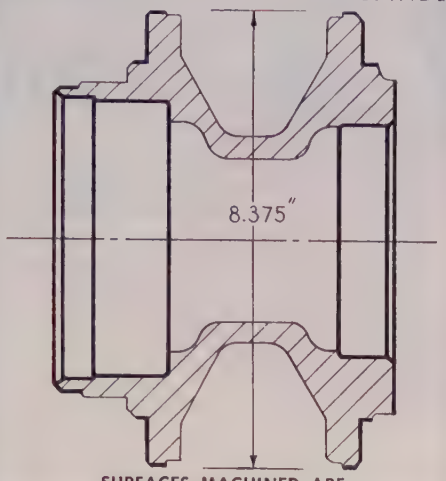
The lake is some 80 miles north of a 200 square mile area in the Larch river district where Fenimore geologists "have proved 566 million tons of iron ore."

The Fenimore holdings are more than 200 miles north of Knob lake, center of Iron Ore Co. of Canada's

(*Please Turn to Page* 79)

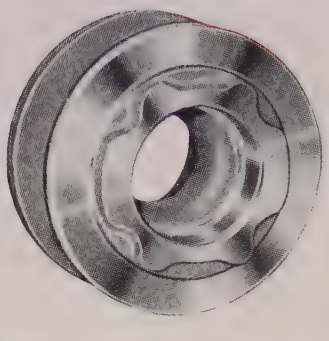
COMPLETE . . IN 38 OPERATIONS

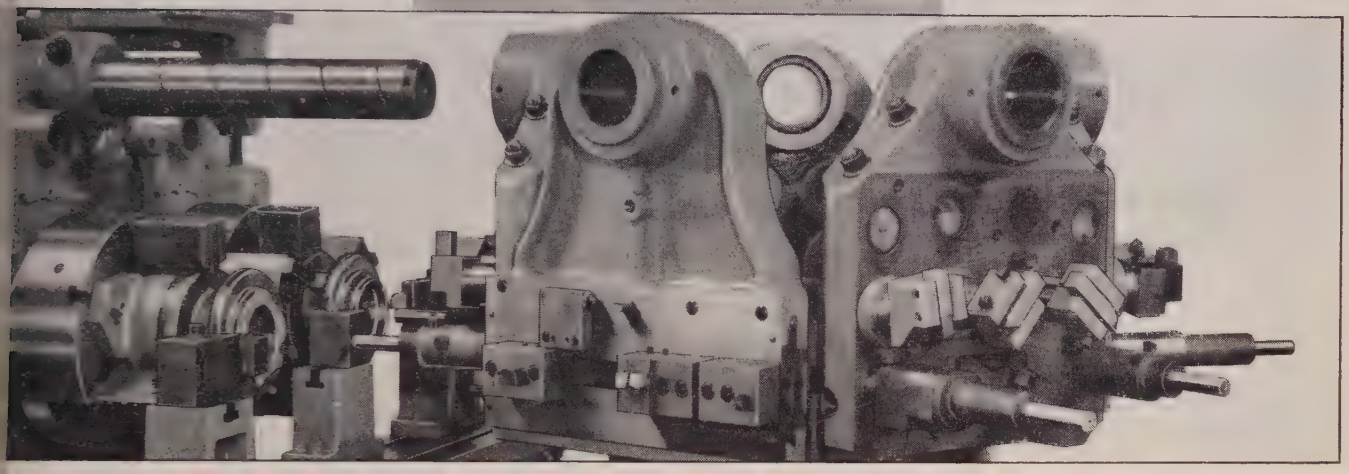




SURFACES MACHINED ARE INDICATED BY HEAVY LINES

. . . in ONE TURRET CYCLE





with a 5D-2 Powerflex TWO-SPINDLE Automatic Turret Lathe plus P&J TOOLING

Looking for production geared to today's demands for increased output at lower costs? You'll find the answer in a P&J 5D-2 Two-Spindle Automatic . . . with P&J Tooling that makes the most of this machine's great production potential.

Two spindles give far greater output than the best obtainable from single spindle machines; initial costs, power consumption, floor space and operator attention are all much less than that required by two single-spindle machines. The result is **cost-cutting performance.** One of these malleable iron rollers is completed every **4.04 minutes — floor-to-floor time!**

Get complete information about doing your tough, costly jobs the fast, economical P&J way. Send for your copy of 5D-2 POWERFLEX Bulletin 123 — or ask P&J Engineers to submit tooling recommendations based on your own prints or sample parts.

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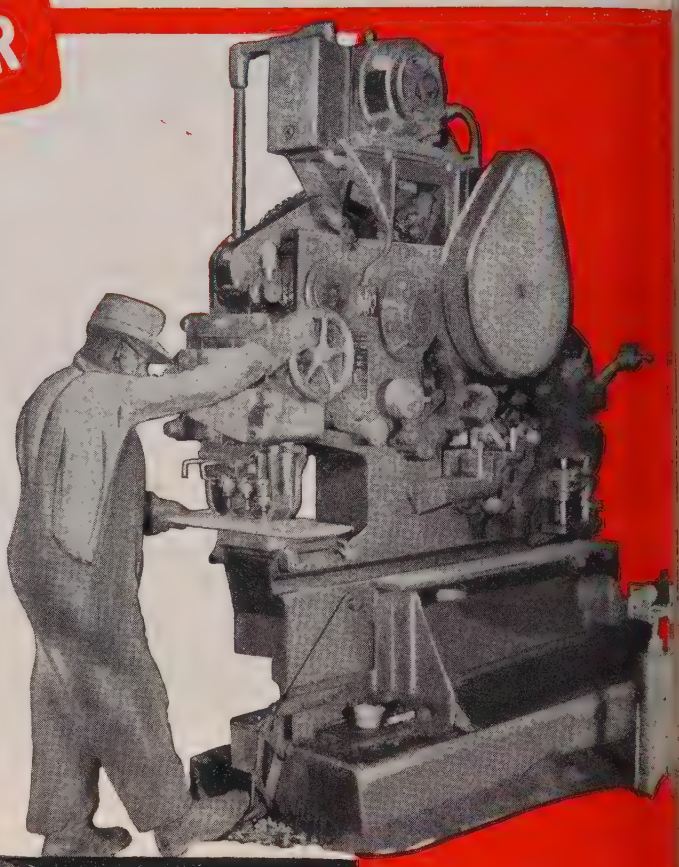
AGENTS: DALLAS, THE STANCO CO., HOUSTON, WESSENDORFF, NELMS & CO

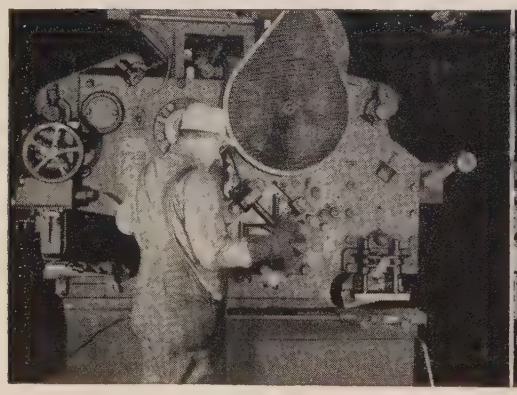
SAVES • SPACE • TIME • MONEY . . . by multiple fabrication operations

"Buffalo" UNIVERSAL IRON WORKER

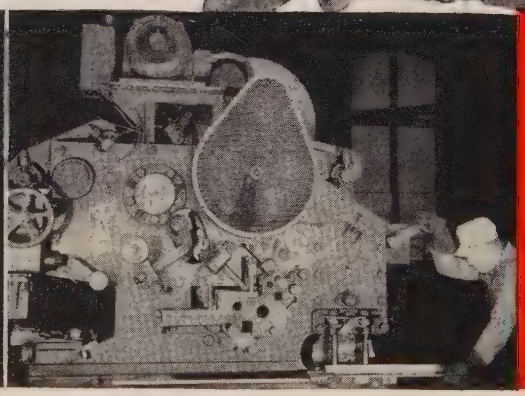


- PUNCHES
- CUTS (bars, angles)
- SHEARS • COPES • NOTCHES

Why give space to five machines to do the operations above, when this one machine can do them all? And it can handle up to three operations at once! Think of the space, time and money this powerful, versatile machine can save in your shop. Write for Bulletin 360D and see the five models available to speed up fabrication on your angles, tees, flats, channels, rounds and squares!



Cutting a 3 x 3 x 1/4" angle.



Slitting a 3/8" tee.

Punching 13/16" holes in 3/8" steel with triple punching attachment.

"Buffalo" MACHINE TOOLS

BUFFALO "FORGE COMPANY

158 MORTIMER STREET BUFFALO, NEW YORK

Canadian Blower & Forge Co, Ltd., Kitchener, Ont.

DRILLING PUNCHING CUTTING SHEARING BENDING

(*Continued from Page 76*)

ltimillion dollar development. e premier said the Fenimore mpany plans to find an "apopriate site" to build a plant to ocess the ore.

w Plans Expansion Abroad

Dow Chemical International Ltd. d Dow Chemical Inter-American d., export subsidiaries of Dow emical Co., Midland, Mich., es- olished sales offices in Zurich, itzerland, and Montevideo, Uru- ay, respectively. This marks tial step in an overseas expan- n program. Other offices will established around the world as pidly as conditions permit.

illard Moves Cleveland Office

Bullard Co., Bridgeport, Conn., achine tool manufacturer, moved Cleveland district office to 16828 nsman Rd., Shaker Heights, O.

andard Buys Los Angeles Firm

Cooper Precision Products, Los ngeles, manufacturer of hex-head d special bolts for the aircraft dustry, becomes on July 1 a holly-owned subsidiary of Stand- d Pressed Steel Co., Jenkintown, a. Both companies will continue operate independently. Harry S. Cooper continues as president of Cooper Precision Products. Standard makes socket-head screws, dowel pins and pressure plugs, locknuts, spring pins, power transmission equipment, collars, shop equipment, factory trucks and screw machine products.

Flame Hardening Plant Opened

Detroit Flame Hardening Co. opened its plant at 17644 Mt. Elliott, Detroit. Its former plant at 116 Manchester, Highland Park, Mich., is now devoted wholly to research and development projects. The firm applies flame hardening and induction hardening to ferrous metals.

Tool Firm Building Plant

E. B. Wiggins Oil Tool Co. Inc., Los Angeles, is constructing a plant at 205 Pasadena Ave., South Pasadena, Calif., for manufacture of couplings for aircraft and industrial use. G. A. Pierson is vice president and general manager.

Power Shovel Firm Names Agent

Marion Power Shovel Co., Marion, O., appointed Tractors Inc., Providence, R. I., as distributor of its excavators and similar products.

Army To Get Million-A-Day Printing Units

Presses, designed by American Type Founders Inc., Elizabeth, N. J., for United States armed forces, are shown being tested in the firm's Mt. Vernon, N. Y., plant. These machines, capable of printing over 1 million leaflets per day, are part of completely self-contained, self-sustaining mobile printing plants characterized as "the latest development in psychological warfare"

McInnes Steel Expands

Addition will increase size of plant by 66 per cent. Cost estimate is $150,000

MAJOR expansion program has been announced by A. Bruce Smith, president, McInnes Steel Co., Corry, Pa. The project will increase the size of the plant by 66 per cent.

Actual construction will start soon and is scheduled to be completed in August. The plant addition, at an estimated cost of $150,000, will be placed to the south of the present forge shop. To facilitate movement of steel, the building will be equipped with two overhead cranes.

The building will contain the machine shop as well as the heat treating, sand blasting and shipping departments.

Construction contract was awarded to Rogers Structural Steel Co., Corry, which also will supply the steel.

Metal Industries To Liquidate

Metal Industries Inc., Youngstown, job steel stamping firm, will be liquidated and cease business, says Harry Hynes, vice president. The company, which was organized in 1946 and built a $300,000 plant a few years ago, already has sold some of its presses.

Can Firm Extends Product Line

Continental Can Co. Inc., New York, purchased the flexible packaging business of Shellmar Products Corp., Mt. Vernon, O. This division is a leading converter of cellophane, polyethylene, pliofilm, acetate, foil, and various laminated and coated products.

Nichols Heads Association

R. B. Nichols, president and general manager of Bantam Bearings Division, Torrington Co., South Bend, Ind., was elected president of Anti-Friction Bearing Manufacturer's Association.

Scrap Dealer Enters New Field

Levene's Waste Material Corp., Binghamton, N. Y., scrap metal dealer, will enter the new steel business soon. The company will

Wide World

Prairie Skyscraper

Model of 18-story buidling, designed by Frank Lloyd Wright for H. C. Price Co., Bartlesville, Okla., has the architectural world agog. Ornamental treatment of the steel, copper, concrete and glass looks strange in this period of straight-lined skyscrapers

retain its present location at 18 Elizabeth St. but headquarters of the firm will move to a new location in Emma street, according to Edward Greenblott, owner.

Cleco Appoints Distributors

Cleco Division, Reed Roller Bit Co., Houston, appointed as distributors for Cleco air tools and accessories in their respective areas: R. C. Bowers Supply Co. Inc.; Montpelier, Vt.; Choate Equipment Co. Inc., Cedar Rapids, Iowa; Lewis Hardware Co., Borger, Tex.

Marquardt Aircraft Expands

Marquardt Aircraft Co. is constructing an engineering and office building and test laboratories at its plant in Van Nuys, Calif.

Plans Sulphuric Acid Plant

General Chemical Division, Allied Chemical & Dye Corp., New York, plans to build a large sulphuric acid plant at Painesville, O. Construction of another acid plant at Baton Rouge, La., was started a few weeks ago. The new Painesville plant is scheduled for operation late this year. Johansen Co., Plainfield, N. J., was awarded the construction contract.

Sylvania To Build Plant

Sylvania Electric Products Inc., New York, plans to build a $6 million plant in Batavia, N. Y., for the production of television and radio receivers. The plant will have 416,000 sq ft of floor space and is set for completion about Feb. 1, 1954. Full operation is expected by August, 1954.

Foxboro Forms Mexican Affiliate

Foxboro Co., Foxboro, Mass., organized a Mexican affiliate, Graficas e Instrumento, S. A., Mexico City. The firm was incorporated for the future manufacture of industrial instruments for measurement and control and instrument supplies.

Welding Hath Charms

ATTRACTION for welding caused a 29-year old shopbreaker to ask the police court magistrate to add 9 months to his 15-months sentence in prison. The strange request granted by the magistrate, was made by the prisoner so he could complete a welding course at the penitentiary in Stony Mountain, Man., Canada.

A. F. Davis, vice president, Lincoln Electric Co., Cleveland, reports this story, based on an Associated Press item. Mr. Davis has written many stories about men who have "rung their own liberty bell" by going into their own welding business and has just published a booklet of these stories called *"Success Through Welding."*

Lincoln Electric has operated a welding school in its Cleveland plant since 1917 from which it has graduated over 40,000 welders.

Alabama Gets $1 Million Plant

The plant which American Brake Shoe Co., New York, will build for production of an undisclosed product will be located at Calera, Ala., about 35 miles south of Birmingham in Shelby county. W. S. Fraula, operating assistant to the president, says the plant will represent an investment of about $1 million. This was reported in the M... 25 issue of STEEL, page 93. Ho... ever, the headline inadvertent... said that Canada would get t... plant.

Production Pool Organized

Small Defense Plants Adminis... tration, Washington, announce... formation of a new small busines... production pool, known as Feder... ated Facilities Inc., Minneapolis. The pool will seek defense co... tracts in the fields of electrom... chanical devices, drop forging... gray iron castings up to 8000 l... general and precision machin... work, research and development... suspension assemblies for Arm... tanks and carriers, sheet metal fa... rication, air conditioning, aircra... assemblies and components, sma... arms and machine gun attachmen... and accessories, and numerou... other small metal products. Mem... bers are: Kausel Foundry Co. an... Superior Plating Inc., Minneapolis; Walter Haertel Co., South Minn... apolis, Minn.; Presto Mfg. Co. In... and Valley Forge & Car Co., S... Paul.

Thor Opens Newark Branch

Thor Power Tool Co., Auror... Ill., will open a sales and servic... factory branch at 1 Tichenor La... & Parkhurst St., Newark, N. J. Th... company makes air and electr... power tools.

Clark Equipment Names Agent

Clark Equipment Co., Batt... Creek, Mich., appointed Christ... Equipment Co., Omaha, Nebr., a... a dealer for Clark's fork lift truck... powered hand trucks and towin... tractors.

Robertshaw-Fulton Expands

Robertshaw-Fulton Controls Co... Greensburg, Pa., plans to expan... its manufacturing facilities at S... Louis, Los Angeles, and Bridgepor... Conn. It is estimated that capac... ity at each of these three location... will be increased by about 50 pe... cent. Robertshaw-Fulton is en... gaged principally in the manufac... ture of devices for automatic co... trol and regulation of temperature... and pressures. The company als... is a large producer of bellows an... bellows assemblies.

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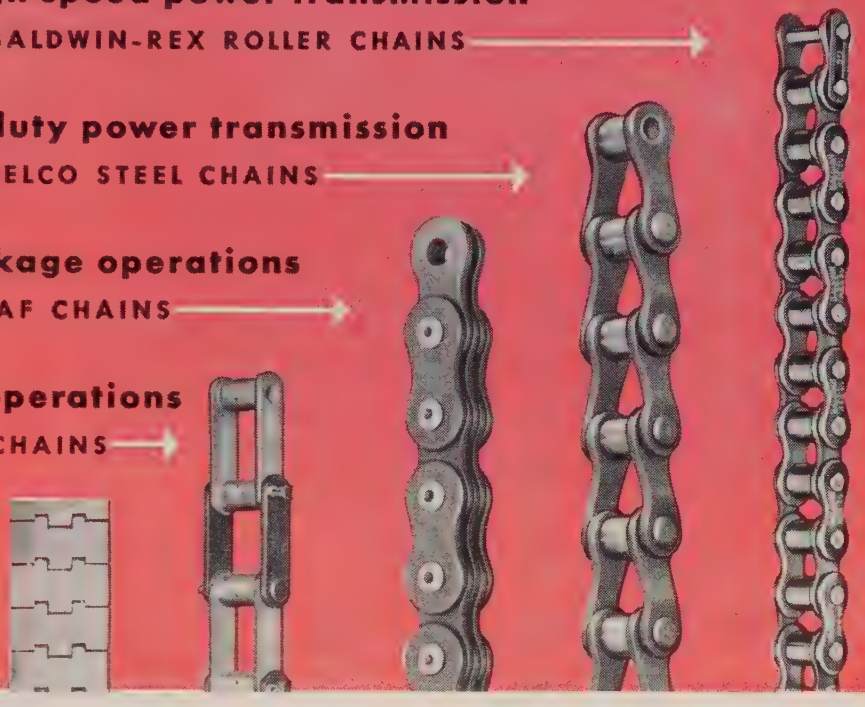

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GAMA Elects Officers

Sheldon Coleman, president of Coleman Co. Inc., Wichita, Kans., succeeds James F. Donnelly, vice president in charge of sales of Servel Inc., Evansville, Ind., as president of Gas Appliance Manufacturers Association, New York. Other GAMA officers are: First vice president, T. T. Arden, executive vice president of Grayson Controls Division, Robertshaw-Fulton Controls Co., Lynwood, Calif.; second vice president, W. F. Rockwell Jr., president of Rockwell Mfg. Co., Pittsburgh, and chairman of the board of Acro Mfg. Co., Columbus, O.; treasurer, Lyle C. Harvey, president and general manager of Affiliated Gas Equipment Inc., Cleveland.

New Armament Firm Organized

Stillman Rubber Co., Culver City, Calif., designer and producer of molded rubber products for aircraft and industrial use, and John F. Drescher, an aircraft armament engineer, have formed Microloc, to engage in research, design, and development of electro-mechanical specialties and armament equipment for use in aircraft and guided missiles. Mr. Drescher is noted for design and development of aircraft armament devices, including bombing and rocket interval controls, electric bomb racks and shackles.

Sheldon Buys Lathe Division

Cincinnati Metalcrafts Inc., Cincinnati, sold its Sebastian Lathe Division to Sheldon Machine Co., Chicago. All manufacturing operations of this division will be moved to Sheldon's plant in the latter city. This step marks the entry of Sheldon, maker of precision lathes, into the heavier gearing field. Cincinnati Metalcrafts plans to devote its entire plant and productive capacity to its major business of producing industrial sheet metal products.

J. B. Wise Co. Changes Hands

J. B. Wise Co., Watertown, N. Y., producer of brass plumbing supplies, has been sold to a group headed by Sol Z. Cohen of New York city.

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Simonds offers you a choice of OIL or AIR Hardening DIE STEEL, whichever is best suited to your requirements. Both types are made from Simonds own steel, are precision ground to a thickness limit of plus or minus .001″ and have an extra smooth surface finish of 25 to 35 micro inches. Edges and ends are square and parallel, with all scale, decarburation and surface defects removed. All sizes come individually packaged with heat treating instructions.

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(non-deforming 5% Chrome Type) is spherodize annealed for good machinability and uniform hardenability. Its wide hardening range (1700° to 1800° F.) makes it practically foolproof in heat-treating. Stock sizes run from ½″ to 2″ thick and 2″ to 10″ wide in 36″ lengths.

SIMONDS OIL HARDENING DIE STEEL

(non-deforming Molybdenum Type) is uniformly annealed for easy machining and uniform hardening. Due to its wide hardening range (1450° to 1540°) good results are assured with even the simplest heat treating equipment. Stock sizes are available from 1/64″ to 3″ thick and ⅛″ to 14″ wide in 18″ lengths. The heavier sizes also come in 36″ lengths.

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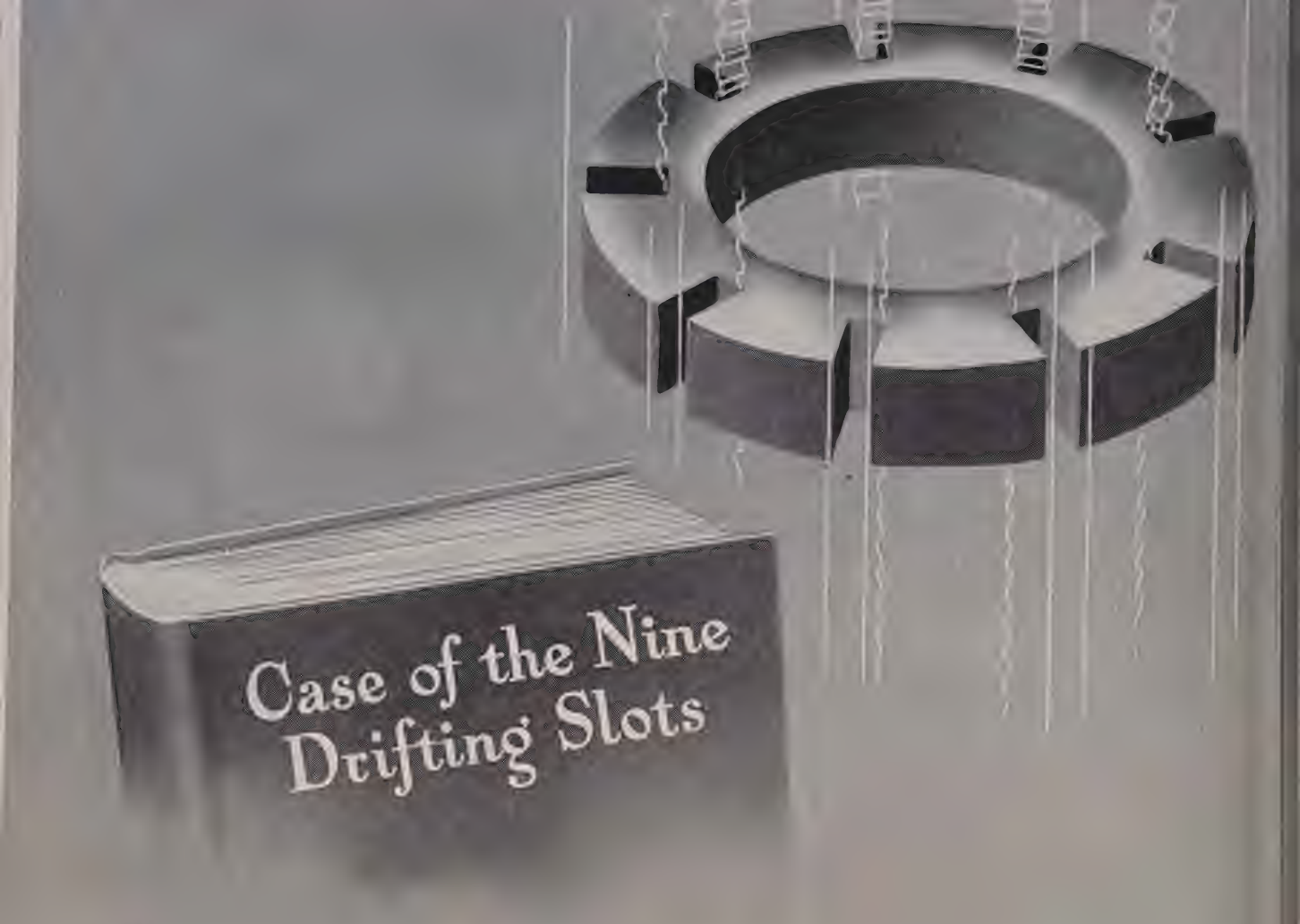
Simonds Abrasive Co., Phila., Pa. and Arvida, Que., Canada



Case of the Nine Drifting Slots

At Detroit Broach a baffling case came up recently—but it was solved in an ingenious manner.

A manufacturer found he was having considerable trouble holding close spacing tolerances on nine precision slots in the O.D. of a ring. When one slot at a time was made, the slot closed in afterward, leaving the slot undersized. This close-in made it difficult to hold spacing tolerances between the nine slots.

Detroit Broach was called in on the case, and after study, recommended that all nine slots of the nut be broached at one time. This was done on a vertical pull-down broaching machine. In contrast to common practice the work travels and the broaches are stationary in a special holder. In this manner the work is pulled through the broach holder and all nine slots are produced in one pass. Guides are incorporated in the set-up to prevent the work from drifting during the cutting operation.

This is just typical of the solutions made every day at Detroit Broach. If you have a special broaching problem, or if you would like further information on the cost saving advantages of broaching, it will pay you to contact Detroit Broach.

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Production AND Engineering NEWS AT A GLANCE

FINISH DISCREPANCY—Chromium plate is less passive in salt spray than in atmospheric exposure. Just what does this mean in terms of bright chrome finish specifications? Dr. Henry Brown, Udylite Corp., explained it this way at the annual convention of the American Electroplaters' Society in Philadelphia last week. Recent tests show that steel given a thin nickel plate followed by chromium does as well in the salt spray corrosion test as steel given a heavier nickel plate followed by chromium. Here's the pitfall: Results if they are used as a basis for plating specifications, will not carry over to outside use. Reason seems to be the activity of moisture collecting on plated parts in industrial areas which changes the protective properties of the chromium plate on nickel.

CAN YOU USE IT?—What is probably the smallest-size tubing ever drawn from commercially pure titanium has been produced at Superior Tube Co., Norristown, Pa. Outside diameter is only 0.0455-inch and wall thickness measures 0.00225-inch. Present uses are pretty much limited to experimental work in electrical, electronic and chemical industries. Availability of this ultra-small product will likely stimulate some fresh application ideas.

A HOT ONE—Precision control of 5000° F is the claim for a carbon resistor-type tube furnace built by Pereny Equipment Co., Columbus, O., for ultra-high temperature work in ceramic processing and fabricating. Power supply is varied from 1 to 100 per cent of connected load using either ignitron-thyratron or saturable reactor systems. Warm-up to 5000°F takes only about two hours, and the entire furnace is shut down automatically if cooling water supply to transformer or electrodes is cut off.

PLASTIC GAINS—Another trial application for reinforced plastics is aboard five new Navy minesweepers. Shortage of monel and aluminum bronze for fresh water and oil tanks forced the move, and the substitutes will be studied for possible large-scale use aboard ship. Plastic tanks are corrosion resistant, weigh 30 to 40 per cent less; and, important for minesweepers, they are also nonmagnetic. Price is expected to be competitive.

CUTTING CLINIC—Almost everyone interested in machining operations is also interested in speeding up the machining output per machine. One factor is that of keeping downtime to an absolute minimum. Another is the elimination of as much nonproductive machine time (handling, gaging, etc.) as is possible. A third is the actual reduction of the cutting time through the use of higher feeds and speeds. Jones & Lamson Co., Springfield, Vt., has done some extensive research on just what speeds and feeds are best under given sets of conditions. As a result of the tests they now talk in terms of 600 sfm instead of 300 sfm as a range for many carbide turning jobs. With a special strain-gage dynamometer the engineers at J & L actually determined the speed-feed combination which gave the best combination of forces on the cutter. Now they are launched on a program of education. Each month a group of about 20 metalworking executives goes to Springfield for a two-day session of lectures, demonstrations, plant tours and pictures. An excellent movie shows, in slow motion, the chips coming off under various cutting conditions and points up the advantages of higher speeds.

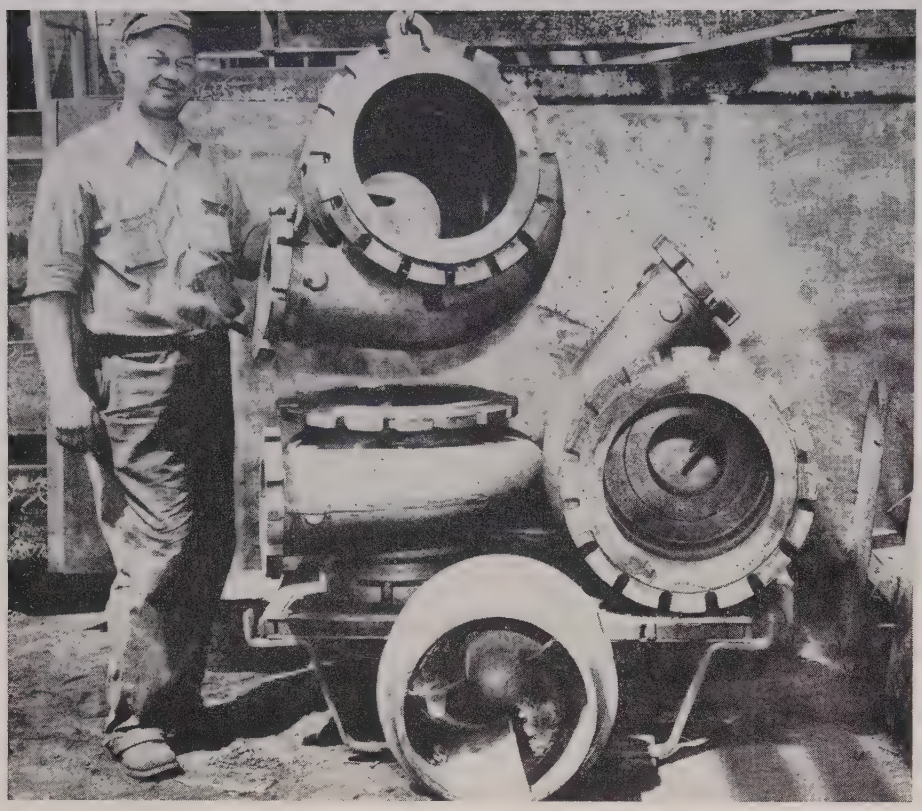
LONGER LIFE—Entry guides used at a large steel company formerly had to be replaced after handling about 40 tons of steel. They now last 4 to 5 times as long. Reason: Guides are hard faced with a one-eighth-inch deposit of a Stellite alloy. They are preheated to 700 to 800°F. before facing and are cooled in lime after the coating operation.

RHODIUM COATINGS—Vacuum technique for applying controlled-thickness rhodium coatings to nonconductive and conductive materials is being commercially tried by Serfass Corp., Bethlehem, Pa. Some of the successful applications include microscope slides, optical mirrors, telescope reflectors, glass go and no-go gages, and glass bearing surfaces. Coating thicknesses can be applied to give controlled reflectivity or transmittency within 5 per cent.

HIGH-FREQUENCY HASSLE—Satisfied users of induction heating, dielectric sealing and resistance welding equipment may be due for an unpleasant surprise if a proposed FCC crackdown takes place beginning June 30. In operation, many of these devices emit radio frequency energy upon frequencies that the FCC must keep clear of interference. Problem becomes even more acute with the advent of widespread VHF and UHF television broadcasting. Offending plants will probably receive notification to remedy the condition at once or face the consequences. At least one firm in the East has designed inexpensive screening panels that will effectively block the offending signals.

NEW PASTURES—Look for more principles of automation to be applied in the plants of electrical-equipment producers. Getting off to a fast start in the automotive field the automation builders and engineers are looking for new fields to conquer. Electrical equipment would seem to be a natural. Production is high and model changes are relatively few and far between. Both of these conditions lend themselves to minimum handling costs and, in many cases, that spells automation.

Metalworking Outlook—p. 37 *Market Outlook—p. 139*



Ductile iron casing and pump impeller

By GEORGE SORKIN
Metallurgist
Navy Dept., Bureau of Ships
Washington, D. C.

Specification For Ductile Iron

Bureau of Ships specification requires low phosphorus raw materials and a ferritizing anneal to give material with highest uniformity. Applications will continue to grow

CULMINATING over 3 years of research and development, at Naval laboratories, the Bureau of Ships has just issued MIL-I-17166A (SHIPS) covering Iron Castings of the Nodular iron type. This new specification is aimed toward obtaining castings having optimum shock resistance under shipboard operating conditions.

Already authorized for uses such as compressors, electric equipment and engine blocks, Bureau of Ships anticipates that ductile iron applications will continue to grow. Moving cautiously during the past few years, the Bureau thoroughly investigated individual equipment applications before permitting the switch from steel, bronze, malleable or gray iron.

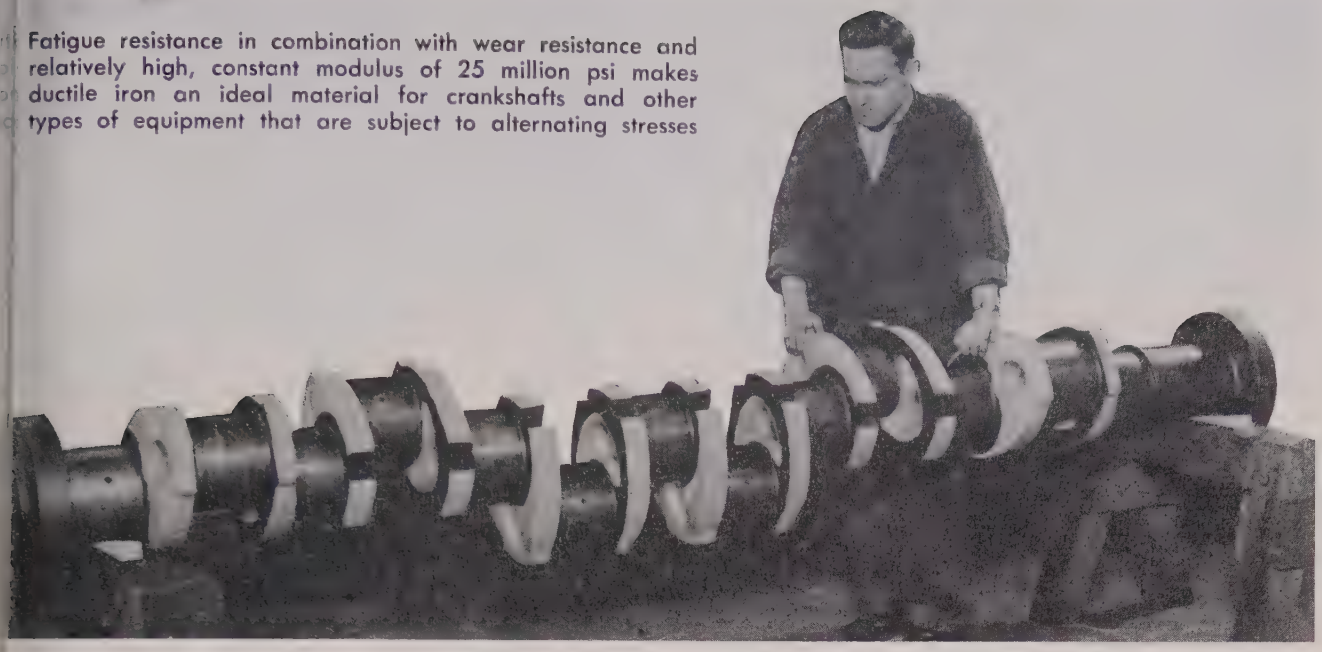
Emphasize Control — The new specification issued April 10, 1953, is a revision of MIL-I-17166 (SHIPS) issued April 29, 1952. It points up the need for close control of raw materials, foundry techniques and heat treatment cycles. Departing from commercial method of specifying ductile iron, the Bureau of Ships specification imposes tight requirements on chemistry, mechanical properties and microstructure. Essentially, the specification is so designed as to require low phosphorus raw materials, and a careful ferritizing anneal.

Chemical Composition & Mechanical Properties Required for Nodular Iron

Carbon	3.0% minimum
Phosphorus	0.08% maximum
Silicon	2.50% maximum
Carbon equivalent of castings having sections 2 inches and over thick (C + 1/3 Si)	4.3%
Tensile strength	60,000 psi, minimum
Yield strength 0.2% offset	45,000 psi, minimum
Elongation in 2 inches	15% minimum
BHN	190 maximum

Requirements for chemical composition and mechanical properties of nodular iron castings are given in the table. Castings also receive a ferritizing anneal to produce material with highest uniformity. Heat treatment must be performed on the whole casting and never on a part only. Castings are required to be sandblasted, gritblasted or tumbled after annealing and also must be free from harmful defects.

Microstructure — Microstructure of the nodular iron castings at 50 diameters must show a matrix having a minimum of 90 per cent ferrite and no primary carbides. Laboratory tests show the advantage of low phosphorus, silicon, primary carbides and pearlite on the low temperature impact properties and transition temperature of nodular



Fatigue resistance in combination with wear resistance and relatively high, constant modulus of 25 million psi makes ductile iron an ideal material for crankshafts and other types of equipment that are subject to alternating stresses

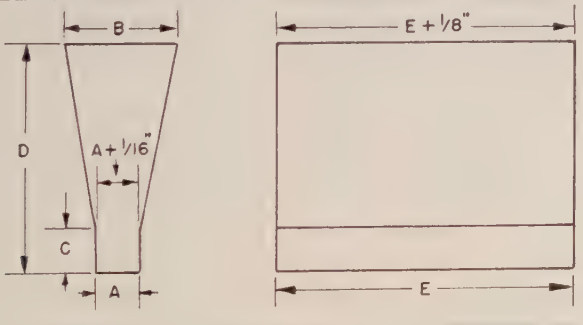
on. While not the ultimate that n be expected from nodular iron, e specification represents mate- al which can regularly be expect- from well controlled foundries.

Sampling—The specification re- ires that one sample for chem- al analysis be taken from each t. A lot consists of all castings the same pattern or same crit- al section size cast from the me inoculated ladle and heat reated in the same heat-treating urnace charge, or if the heat- reating furnaces are provided with ecording pyrometers, subjected o the same heat treatment.

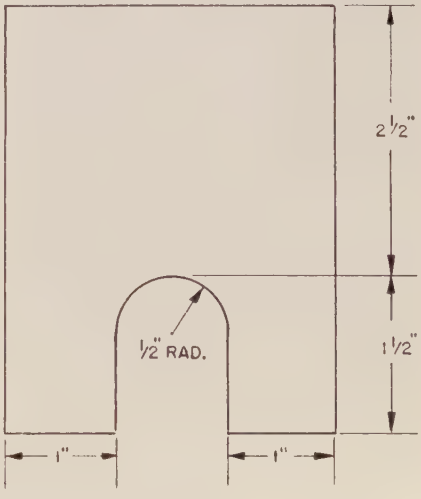
It is recommended that drilling for analysis be done with broken test specimens. For carbon determinations, a chilled pencil type specimen is cast for each lot.

Tension Tests—Test specimens are taken from separately cast "Y" blocks of the form and dimensions shown in Figure I. Generally, the size of the coupon cast is specified by the Bureau of Ships. If the size is not specified, the size of the test block shall be related to the thickest section of the casting. At the option of the producer, the 1-inch keel block casting shown in Figure 2 may be used in place of the 1-inch "Y" block.

Test samples should be poured with the approximate last castings of the lot and should be heat-treated with the lot of castings represented. One metallographic test is made for each lot after annealing. Except for light section castings, portions of test blocks, ends of tension test specimens or sections of castings may be used for metallographic examination. In the case of light section castings when the as-cast structure can be expected to differ from the as-cast structure of the test blocks, a metallographic sample is taken from a portion of the gate, a light section from or adjacent to the casting, or from a cast-on test coupon.



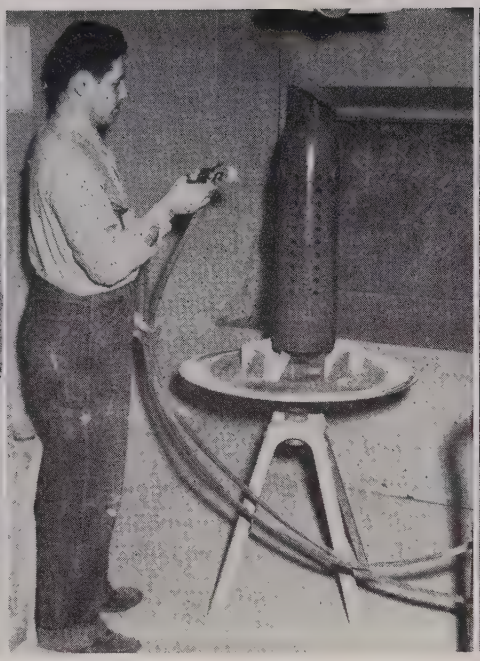
DIMENSION	1 INCH BLOCK	3 INCH BLOCK
A	1	3
B	2 1/8"	5
C	1 1/2"	2 5/8"
D	4	5 3/8"
E	6	6

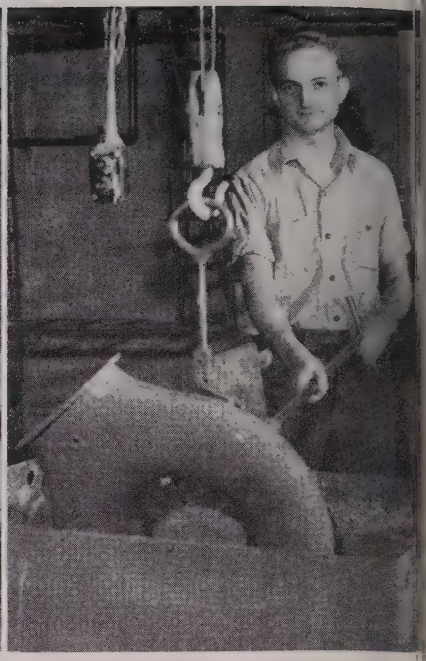


NOTE: LENGTH SHALL BE 6 INCHES

"Y" blocks of form and dimensions shown above are used in tension tests for new military specifications from Bureau of Ships to cover ductile iron

1-inch keel block may be used in place of the "Y" block for tension tests





Left—Surfaces to be coated must be clean. Alkaline cleaners remove soil; rich alloys are pickled in nitric-hydrofluoric acid. Spraying (center) or dipping (right) is used for application of the coating, depending on size of the part. Dipping is best fo small intricate parts. Special spra guns help cover hard-to-reach area

NEW METHODS PAY OFF FOR . . .

High Temperature Ceramic Coating

New facilities were designed and constructed solely for processing high temperature ceramic coatings. Where metals must be protected from heat, this coating offers a solution

FIRST PLANT designed and built specifically to apply a heat resistant ceramic coating to metal parts started operation a few weeks ago at Hotpoint Co. in Milwaukee.

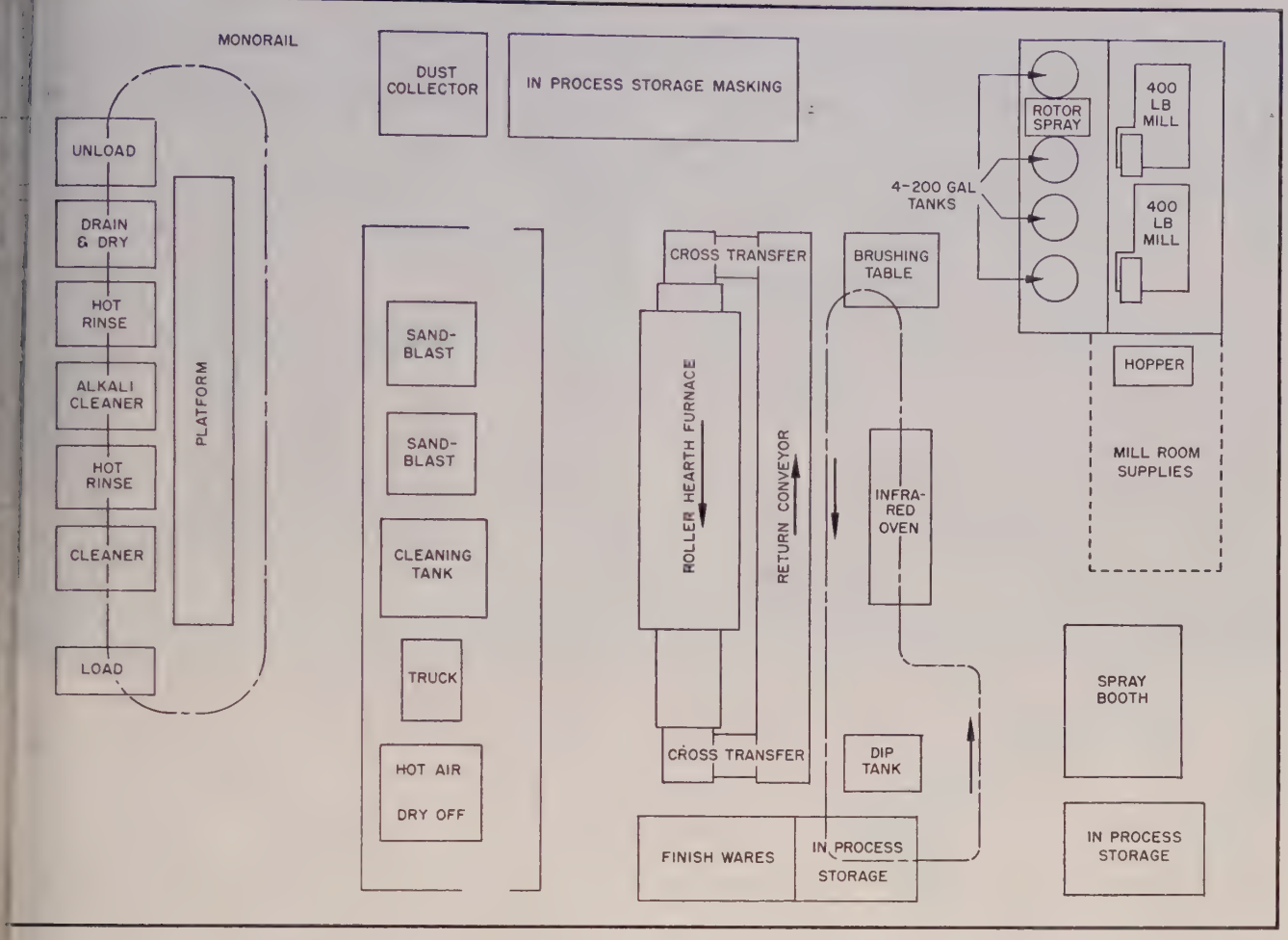
Entire production facilities are designed especially for processing the new protective finish. Equipment for metal and coating preparation, application, drying and firing is arranged in a smooth flowing lay-out. Special equipment has been designed to process a wide variety of items, and new techniques have been developed for coating intricate parts.

Purpose of the coating: To conserve vital defense metals. Aircraft engine exhaust flames, which normally corrode unprotected metal rapidly, are held in check by the ceramic layer. Field tests show that the coating gives at least double life to aircraft components such as Turbosupercharger parts. In addition to defense uses, Hotpoint feels that future prospects for the coating in civilian applications are promising. Where metals must be protected from heat, this process offers a solution for many products in automotive, aircraft, industrial heating and in the appliance field.

Hot Firing—The ceramic material is produced in the dry form by Chicago Vitreous Enamel Products and is converted to a water suspension in Hotpoint's mill room. It is applied to parts in the liquid form by dipping or spraying, in a manner similar to that used for vitreous porcelain enamel. Coating is fused to the metal at about 1800°F, which is higher than the firing temperature for porcelain enamel. Coating is ap plied thin—something like 0.00 inch thick—and fuses to a har heat-resistant surface. This thi finish provides an impervious pro tective layer which shows no ef fect after hours of direct exposur in a blast flame.

Hotpoint first began turning out ceramic-coated parts for the Air Force about a year and a half ago They decided soon after that modi fication of conventional equipmen was at best a stop-gap procedur Design and construction was start ed on new facilities matched sole ly to processing of high tempera ture ceramic coatings. Thinnes of the coating, critical nature o metal preparation, intricate desig of parts, and the perfection of fin ish that is necessary to withstan the high temperatures require car in every step of the productio operation.

Getting Ready — Coatings ar applied to a variety of alloy ranging from mild steel to Incone



Plant layout for applying high temperature ceramic coating to metal parts

ype compositions. In all cases urfaces to be coated must be exceptionally clean. Degreasers, alkaline and emulsion cleaners are satisfactory for soil removal. Rich alloys, such as the Stellites and certain superalloys are pickled in 10 per cent nitric plus 2 per cent hydrofluoric acid at 200°F, after cleaning.

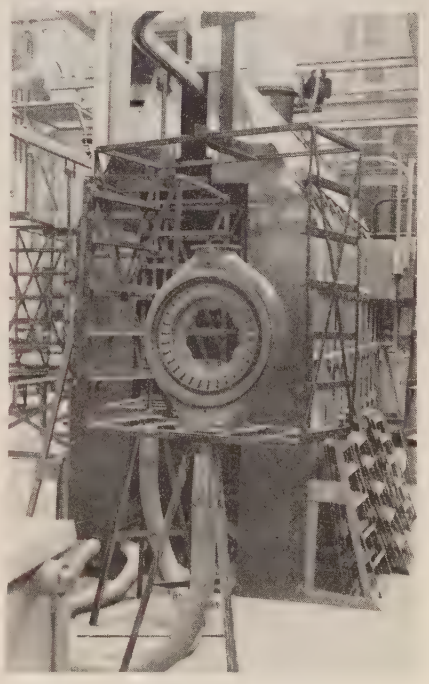
Parts are then sandblasted to give uniform surface roughness. Grade 21 sand does the job in this operation. Special equipment is used to give uniform sandblasting of all areas in intricate shapes.

Coating Make-Up—The ceramic coating material is made up of basic glass frits and refractories, such as chromium oxide, silica, calcined alumina, diaspore and titanium oxide. These are mixed with clay and water and ground in regular porcelain enamel mills using porcelain balls for grinding. A special area is set aside in the plant for preparation and storage of coating composition.

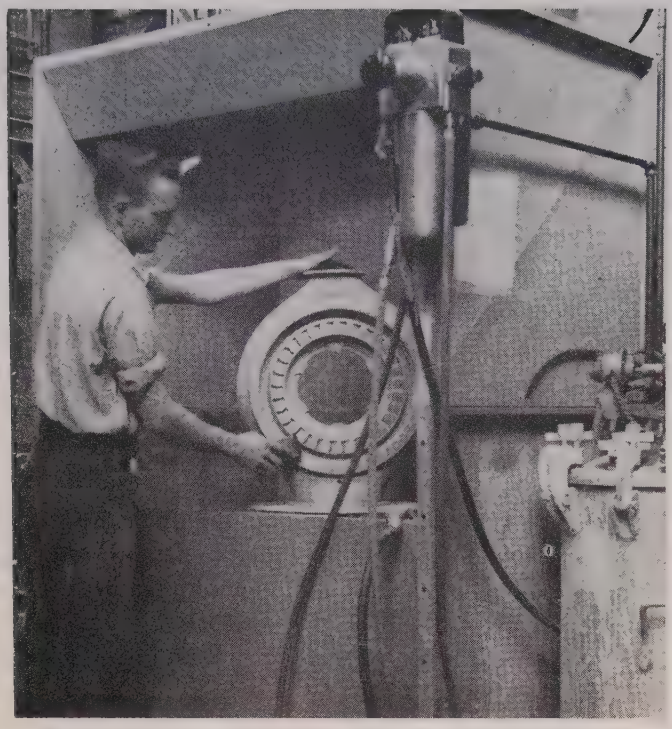
The coating materials are ground very fine, usually to less than half gram residue on a 325 mesh screen using a standard 100 gram test sample. After milling, the coating composition is aged at least 24 hours before using.

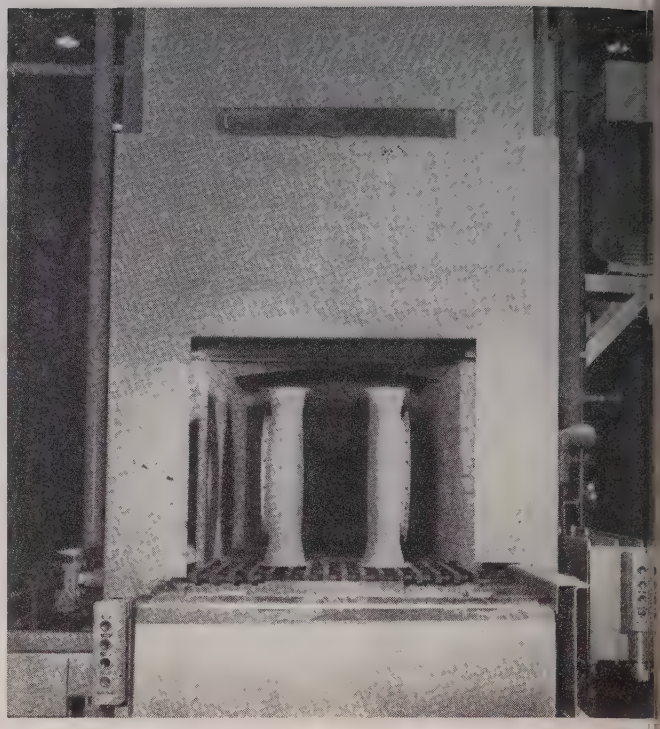
Move While Dipping—Dipping or spraying is used for application of the coating depending on the type of part. Dipping is best for small intricate parts; skillful handling is required to give smooth application of the enamel composition at a thickness of 0.001-inch over the entire surface. Parts to be coated are kept in motion to insure proper flowing of the coating material over all sections to be covered. Best results are obtained with tong-dipping procedures combined with slushing or flo-coating.

Consistency of the enamel composition must be carefully controlled for best results in dipping. A simple test panel is employed to check the proper adjustment of the enamel for dipping. This panel,



Infrared heating in conjunction with rapid flow of air across parts is used to dry wet coating. Rapid drying is essential to prevent water streaking. Rotary motion of parts until coating is dry is an aid in getting uniformity





Left — After drying, coating is brushed off areas of part where it is not desired. A special exhaust booth takes out dust. Right — Roller-hearth-type electric furnace used to fuse coating to the base has three separate zones in which time and temperature may be closely controlled. Electric eye opens and closes furnace doors

which is similar to the standard hairline test panel, is used to determine the tendency of the enamel to waterstreak. The panel is dipped into the enamel composition and after draining, the raised edges of the center section are observed for breaks or waterstreaks. Additions are then made to the composition to give the proper set for the best possible dipping efficiency.

Gets Tough Spots — Special spray guns allow operators to cover hard-to-reach areas. Guns with 45°, 90°, and 360° spray patterns and with extension arms and moveable platforms have been designed to fit inside complicated aircraft parts. The nozzles and tips of these guns are similar to paint-type guns rather than the larger orifices generally used with porcelain enamel. They are made this way because of the thinness of the ceramic coating.

Next step after the wet coating is applied is drying. Rapid drying of the enamel composition on the parts is essential to prevent waterstreaking in the coating. Infrared drying in conjunction with rapid flow of heated air across the parts is used. Rotary motion of dipped parts until the coating is almost completely dried also helps maintain uniformity. Drying high temperature ceramic coatings takes longer than for ordinary porcelain enamels.

Handle With Care—Dried coatings are fragile and will not withstand even handling with canvas gloves. Processing is arranged so that a minimum of handling is required. After drying, coating composition is brushed off the areas of parts where it is not desired. A specially constructed exhaust booth is used for this brush-off operation.

Fuse to Base—Firing is the next operation. It is carried out at temperatures considerably above the ordinary porcelain enameling range. Majority of coatings are fused to the metal at about 1800° F in a slightly reducing atmosphere. A special furnace was designed to minimize the amount of distortion in parts at this elevated temperature. The electric furnace is of the roller-hearth type and has three separate zones in which time and temperature may be controlled. Operators can adjust preheating, firing, and afterheating cycles to decrease warpage of the parts. An electric eye automatically opens and closes furnace doors at entrance and exit end as parts approach the pass through.

Use of a slightly reducing furnace atmosphere during firing produces a smoother textured coating and improves adherence. The controlled atmosphere is especially important for use in processing coatings on low alloy metals and mild steel.

Must Meet Test—To supplement controls checks on enamel composition used in production operations, daily tests are also made on fired samples for heat resistance and adherence of the coating to the metal. Here's how this test is made: A cylinder 2-inches by 1 inch is coated and suspended in a blast flame inside a large tube. The flame temperature is held constant at the edge of the cylinder by using either an optical or contact pyrometer. The test temperature is usually the anticipated operating temperature of the material being coated. This test is run for about 16 hours. Shorter test periods at higher temperatures are also used for rapid control checking. Hotpoint's experience: It's a tough test and rapidly shows up ability of the coating to stand up in the hot spots ahead of it.

Here's a production idea that cuts costs...improves products... Thomas pre-coated strip

Thomas Cold Rolled Pre-coated Strip steel is more than a quality product—it's a production idea that helps reduce costs—speeds operations and makes a better finished product.

Take Thomas electro-plated copper strip for example. It serves as a die lubricant and stretches die life, protects parts in process against rust, is used as a low-cost final finish for many products and increases efficiency of tinning, soldering and brazing operations. In many instances entire operations such as raw material preparation, intermediate cleaning, buffing and final plating all may be eliminated.

Profits and production start quicker, get there faster when you include Thomas Pre-coated Strip steel in your plans to produce better products. To learn how you can enjoy these advantages write today for information.

Cold-rolled strip steel electrolytically pre-coated with Zinc, Copper, Brass, Nickel and Lead-Alloy in Natural, Planished and Buffed Finishes—Hot Dip Tin and Lead-Alloy Coated—Lacquer Coated in Colors—Annealed Spring Steel—Alloy Strip Steel—Uncoated Strip Steel. Carefully produced to your specifications.

Thomas Strip

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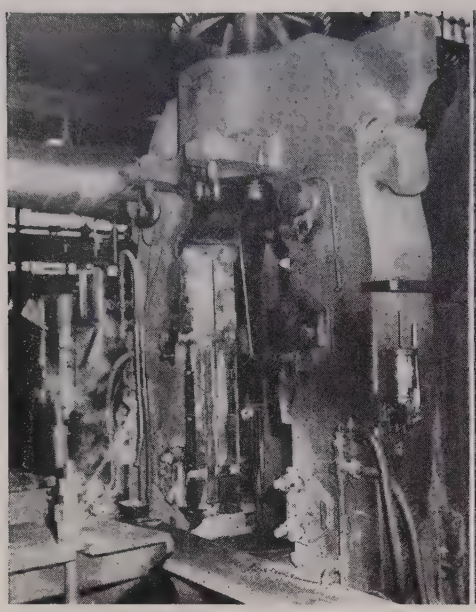
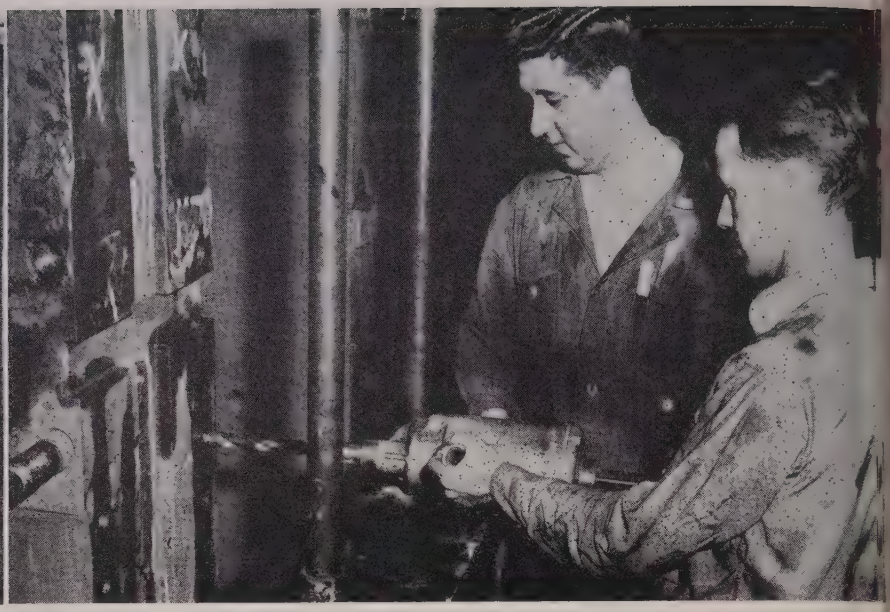
Pittsburgh Steel Company

Thomas Strip Division • Warren, Ohio

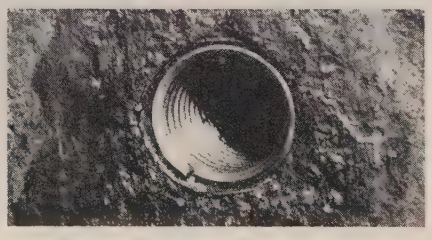


Damage to 3-high breakdown mills is caused by loose wear plates rubbing against mill housings. Replacing stripped threads has been simplified with wire inserts



Workmen redrill worn and stripped holes in housing faces. A wearing plate, secured with 22 bolts, will be anchored to this housing. Closeup shows an insert-protected hole

Thread Inserts Cut Overhaul Time



Worn and stripped thread repair time cut from 80 to 24 man-hours at Sharon Steel. Strong threads eliminate much wearing action, treble the operating time between overhauls

REPAIRING stripped holes in 3-high breakdown mills with wire screw-thread inserts eliminates costly damage to mill housings, reduces maintenance downtime 66 per cent, triples running time between overhaul jobs and increases production at the Niles Rolling Mill Division of Sharon Steel Corp., Niles, O.

Corrosive action of coolant water, combined with constant pressures required to operate the mills, caused threads to wear, strip and loosen. As a result, wearing plates chafed against mill housings, causing excessive damage. To protect costly housing faces from this damage, it was necessary to overhaul breakdown mills twice a year.

Lengthy Job — Reduction in maintenance downtime was accomplished as follows: Formerly, stripped thread holes were redrilled and tapped for the next larger size. Each successive overhaul required enlarging the hole ⅛-inch. Starting with original ¾-inch holes, future repairs would eventually necessitate two drilling and tapping operations, the first being a ⅞-inch hole, and the second a 1-inch hole.

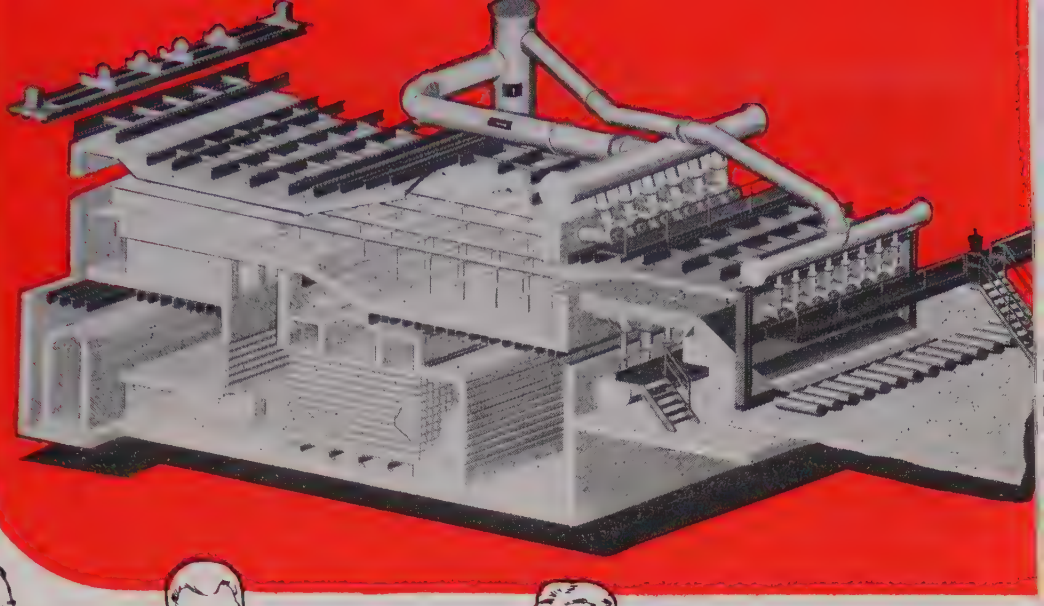
When 1-inch holes required repair, they were filled with weld, drilled to the original size, and the same drilling and tapping operations started again. This sequence of operations continued through the life of a breakdown mill. As much as 80 manhours were often required to complete this repair.

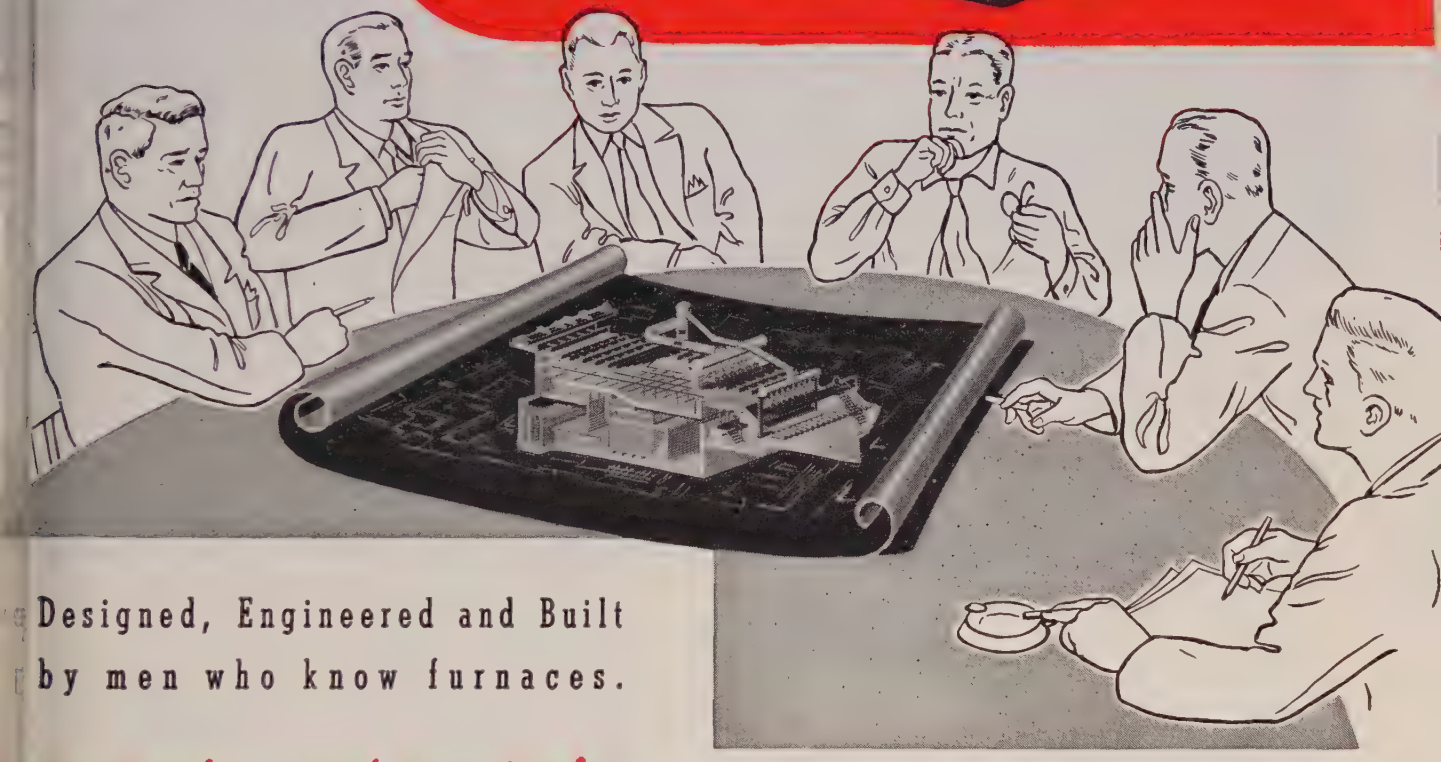
Not Any More — Now, worn threads are drilled out and retapped, and wire inserts made by Heli-Coil Corp., Danbury, Conn,. are installed to provide permanent threads of the original size. Damaged holes used to be filled with weld before the drilling, tapping and insert installing operations. No future thread repair will be necessary on the insert-protected holes. Repairing housing faces with wire thread inserts requires approximately 24 manhours.

Breakdown mills were formerly torn down every six months for the specific purpose of repairing worn and stripped holes in housing faces. In contrast, wearing plates secured ten months ago with wire thread inserts, show no signs of loosening. Overhaul jobs generally required from 10 to 14 days. Approximately 40 manhours were required to tear down a mill. The condition of housing faces dictated the amount of work necessary to complete the repairs. Sometimes, 50 to 60 of the 88 holes in the housing face had to be filled with weld prior to drilling.

or better
reheating

SLABS
BLOOMS
BILLETS
BARS, ETC.





Designed, Engineered and Built
by men who know furnaces.

No Wonder Steel Men Prefer

RUST CONTINUOUS REHEATING FURNACES

for Accurate Temperature Control • High Capacity • Economy

Rust's patented zone-controlled, double or triple-fired, recuperative, continuous furnaces are individually designed to meet specific needs. Each furnace provides positive automatic control of predetermined heating temperature. Flexibility is achieved by simply changing the fuel firing rate in the heating zone. The result is high tonnage output with minimum fuel consumption. In addition to reheating furnaces, Rust builds other types (designed for any fuel) to meet practically all metallurgical heating needs. For either new or modernization projects rely on Rust for the complete job.

HE WHOLE JOB
ONE JOB WITH A
"RUST PACKAGE CONTRACT"

One contract covers everything . . . from blueprint through start up. Rust assumes responsibility for design, manufacture, erection, and is prepared to undertake all phases of the work with its own forces, including wiring and piping. This results in substantial savings . . . One profit instead of pyramiding ones which accrue where many subs are employed.

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Pioneers in Furnace Design

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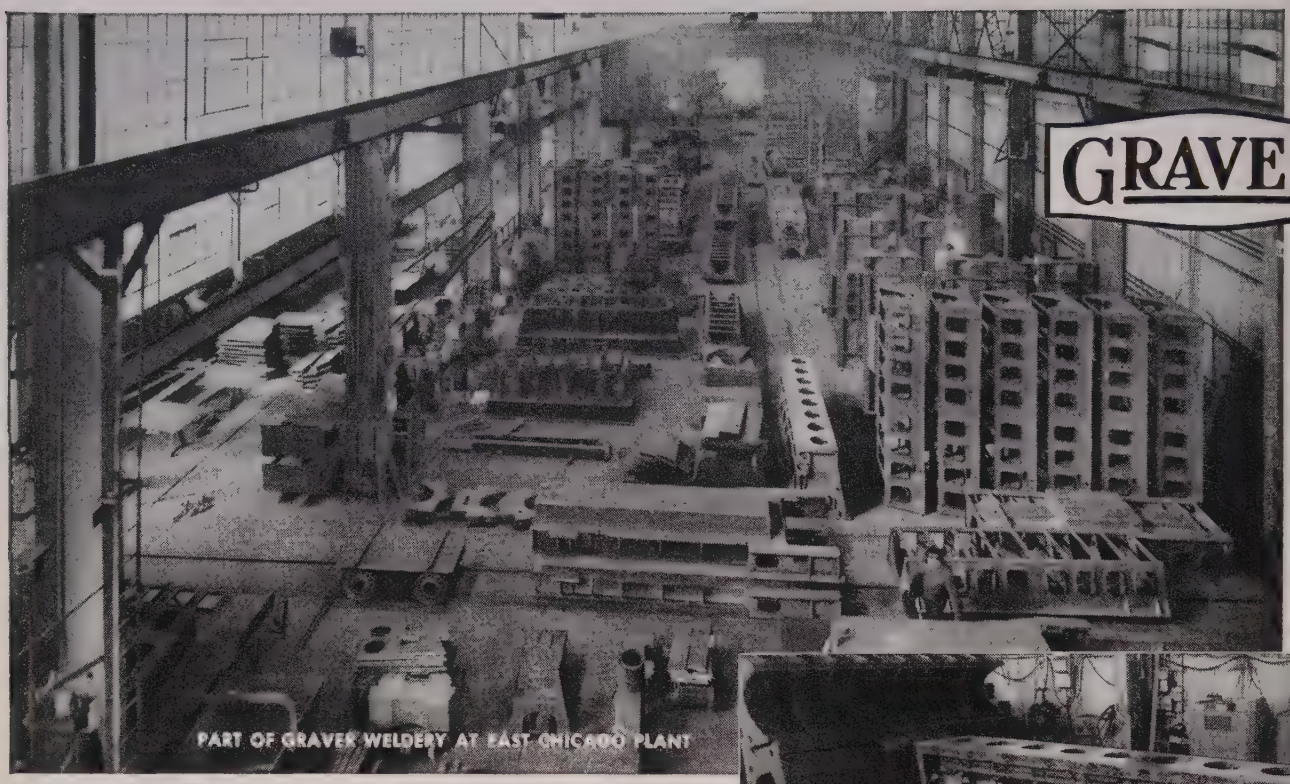
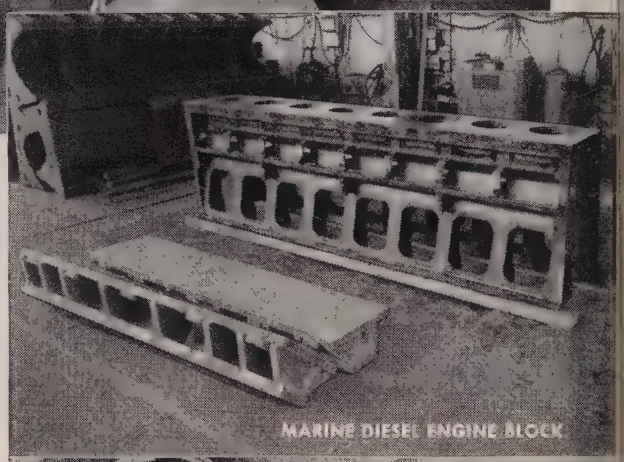


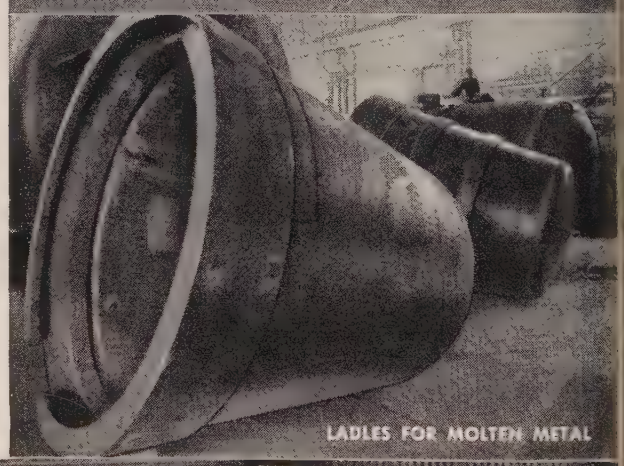
WELDMENTS

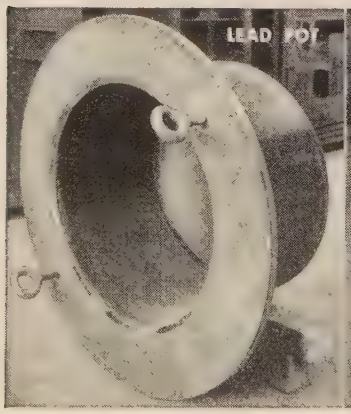
in a wide range

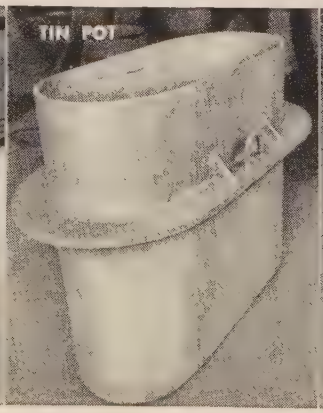
by GRAVER

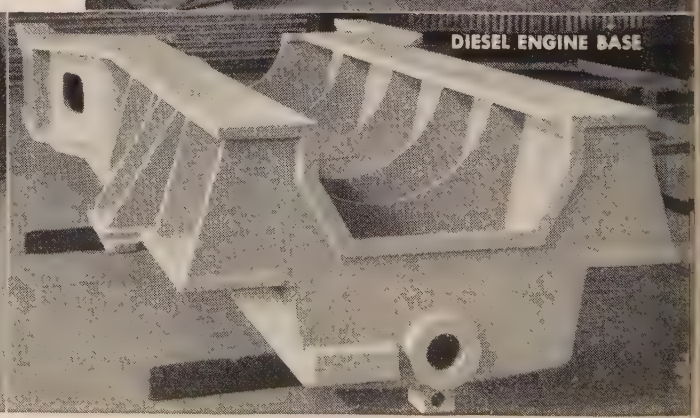
Manufacturers in the heavy industries field have for many years found Graver an excellent source for welded sub-assemblies. From Graver's well-equipped weldery has flowed a continuous succession of weldments for a wide range of industries. Pictured are examples of recent Graver work . . . mass-produced but expertly fabricated . . . with the special advantages secured through sub-contracting to Graver: economy in cost, rigid quality controls, creative engineering and sound welding research.


MARINE DIESEL ENGINE BLOCK


LADLES FOR MOLTEN METAL


LEAD POT


TIN POT


DIESEL ENGINE BASE

GRAVER TANK & MFG. CO., INC.

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arbide Rolls Save

Size uniformity, long roll life are results reported in stainless wire flattening

WHEN squeezed between rising osts and narrowed markets there s one natural thing to do and nowles Loom Reed Works Inc., ew Bedford, Mass., did it. They ook another look at their plant o see where costs could be trimmed nd quality improved.

The company rolls stainless steel ire for loom reeds that the tex- ile industry employs in the proc- ss of weaving cloth from natural nd synthetic materials. Studies howed three reasons why rolling osts were high.

1. Metal rolls used in rolling wire for reeds allowed only a maximum of two weeks' production per spot per roll.

2. As they wore or mushed, the rolls also tended to crown the reed wire slightly and cause rejects.

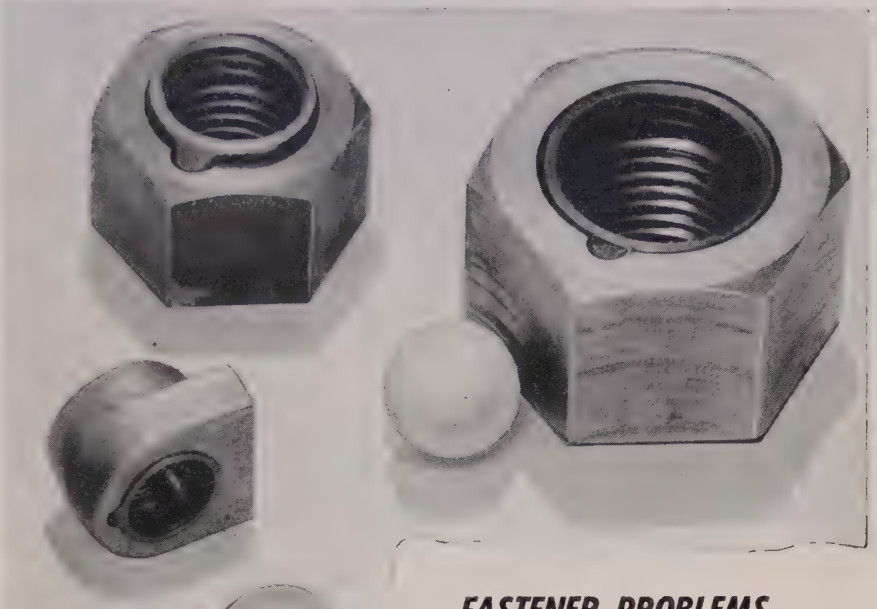
3. Continuous checking of wire sizes was a must at the start, and during the production run, because the steel rolls expanded and contracted under the heat of the run to produce product variations.

Precision Job—In making reeds with 35 to 90 dents per inch, superior work finish, absolutely flat wire and uniformly close tolerances are necessary to facilitate producing loom reeds that provide quality woven products. The operation involves rolling the stainless wire into reeds ranging from 0.005 to 0.025-inch thickness by means of a pair of rolls running at a speed of about 70 rpm.

To keep the reed wire at a uniform size and to extremely close tolerances, the spot or path traveled by the material going through the rolls is changed periodically. This is done by means of adjustable guides. Since the spot of the wire travel becomes worn in about two weeks, it doesn't take long on a 9-hour, 5-day week schedule, before the whole face areas of the two rolls are worn to a point where replacements are needed.

What to Do?—Answer came with tungsten carbide rolls especially manufactured by the Carboloy Department of General Electric Co.,

SPECIAL



—FASTENER PROBLEMS Take Special EXPERIENCE

IS your locknut problem one of size? Is it one of metals? Is it a matter of protection? Is it special due to shape, dimensions, installation, space limitation? Must it be high—low—or perhaps countersunk?

It doesn't matter! If it's a problem of keeping something *tight* on a bolt, Security Engineers have the "know how" and experience to solve the problem. Security Locknuts and Fasteners hold in *any* position on the bolt. They can be removed and replaced any number of times without damaging the bolt or without loss of locking effect. The fastener body takes the load not the locking ring and Security Fasteners operate as a one-piece unit. No extra parts, nothing to adjust, nothing to shear.

If you have a fastener problem challenge us to solve it! We would like to tell you what we have done for others. *Fill in and send the coupon.*

Above are just a few of the many special fasteners we have made. We have solved fastener problems involving a wide range of sizes, metals and shapes. If you can't keep it tight, we can!

Security
The Nut You Can't Shake Loose

SPECIAL OFFER—Ask for a Security Thread Tolerance Chart. Spin the dial and you have your thread tolerance figures.

SECURITY LOCKNUT CORPORATION
1504 North Ave., Melrose Park, Ill.

Please send me without obligation:

☐ One of your Thread Tolerance Charts.
☐ We have a fastener problem and would like to know more about Security Locknuts.

Company Name_____
Address_____
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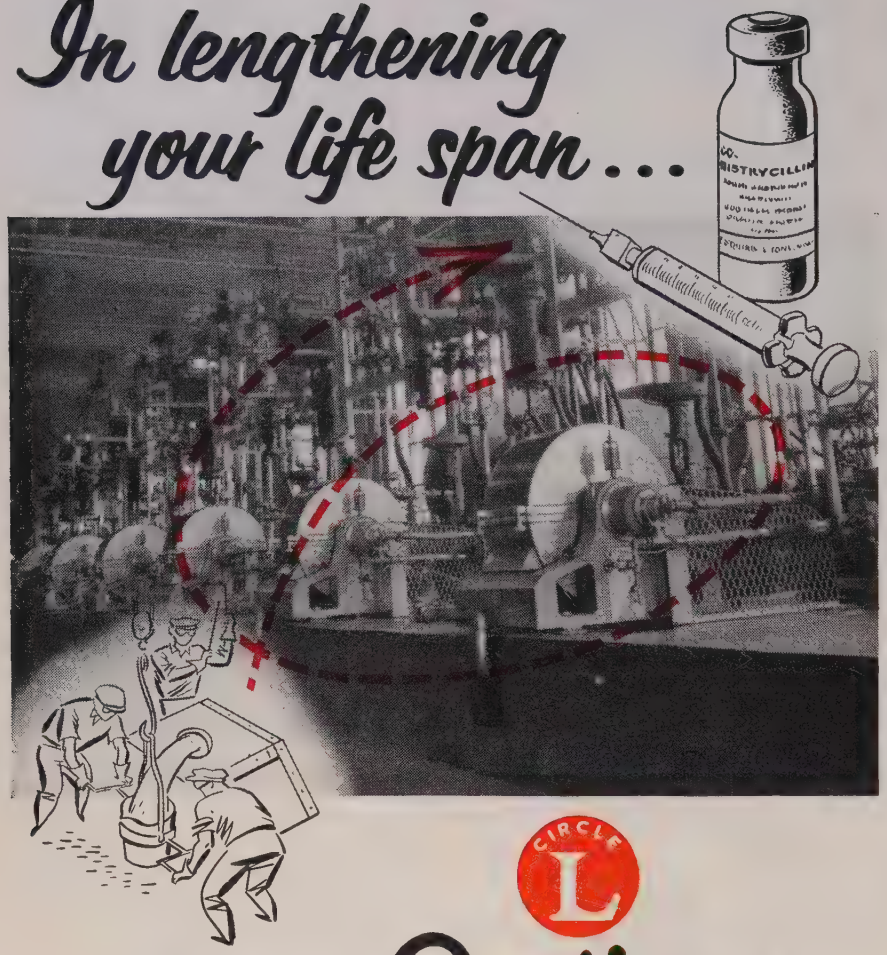
Signed_____

In lengthening your life span . . .



LEBANON Castings are at work

MAKING penicillin and other antibiotics requires carefully engineered equipment. From this assortment of vats and filters, piping and valves come "wonder drugs" that lengthen your life span.

E. R. Squibb & Sons Laboratories at New Brunswick, New Jersey, make these vital antibiotics. Here Squibb uses special automatic process control equipment made by the Fischer & Porter Company that includes many Lebanon CIRCLE (L) castings. To maintain the "Reliability, Uniformity, Purity and Efficacy" of these Squibb products, each CIRCLE (L) casting must be thoroughly sound and unaffected by the concentrated caustic and sulphuric acids present in the manufacturing process.

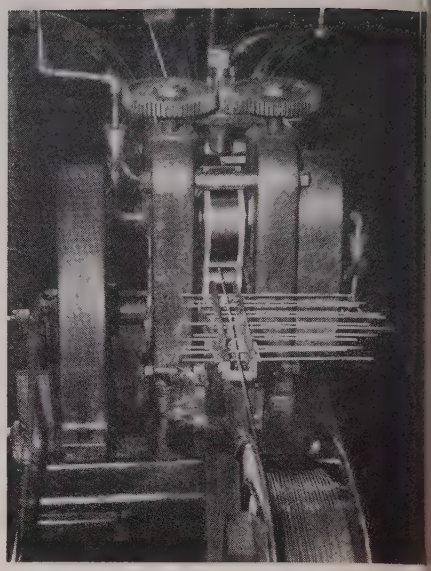
In difficult services, services where perfection in material and workmanship are demanded, Lebanon CIRCLE (L) castings have established remarkable records.

You should see—STEEL WITH A THOUSAND QUALITIES—37-min. 16 mm, full-color sound film on the making of steel castings. For information write: Dept. B, Lebanon Steel Foundry.

LEBANON Castings

CARBON, SPECIAL ALLOY AND STAINLESS STEEL

LEBANON STEEL FOUNDRY LEBANON, PA.



CARBIDE SHOWS NO WEAR

. . . not even after year in one spot

Detroit. Savings were reported almost immediately. The biggest headache, reed size variations, no longer was a problem while the wire was being processed through the rolls. This first saving produced a second—in manpower. Instead of tying up one man for each machine, a lone operator could handle several.

After a 22-month recapitulation of the roll equipment's production efficiency, the company found that roll wear was reduced to practically nil. Instead of changing the rolling spot 24 times a year, the company discovered it was rolling stainless steel wire on the same spot on the carbide rolls a year later, with no sign of wear.

Inspection records indicated that variations in reed wire and size and finish due to contraction or expansion of the rolls caused by heat no longer presented rejects. Furthermore, the high luster of the carbide rolls automatically imparted a luster finish to the reeds, adding to their marketability.

Metal Primer Contains Rubber

Red lead metal primer said to provide a tough, hard, moisture-proof adhesive coating on galvanized metals, structural steel, iron, etc., has just been developed by Foundry Rubber Inc., Washington. Called Paraprime, this new product contains rubber for greater resistance to galvanic corrosion, acids, alkalis, chemicals, corrosive gases, and moisture.

RUGGED Century MOTORS help

KEEP PRODUCTION ROLLING

Arrow shows 75 horsepower Century Slip Ring motor installed on a large bending roll.

Century Motors are designed for stamina, engineered for long, dependable service, carefully tested and balanced for precision performance.

What's more, you can select a size and type of Century Motor that's exactly right for your particular job. They're built in sizes from 1/8 to 400 h.p.—to meet all kinds of atmospheric or plant operating conditions.

Why settle for less than a Century, when you specify your next electric motor?

Century C MOTORS

CENTURY ELECTRIC COMPANY
1806 PINE STREET • ST. LOUIS 3, MISSOURI

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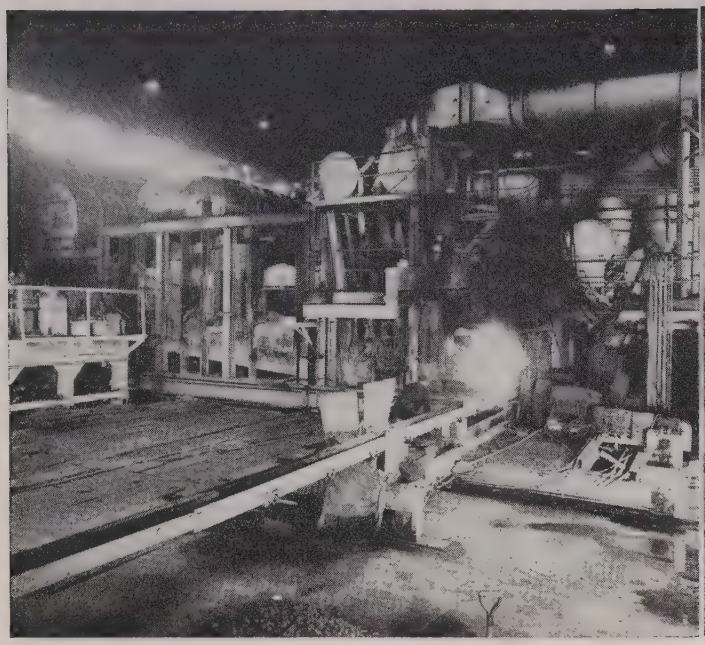
OFFICES AND STOCK POINTS IN PRINCIPAL CITIES



Two-zone billet reheating furnace has capacity of 80 tons per hour. Charger and ejector equipment is shown

One edger and two additional horizontal stands were added to ten 2-high stands and four vertical edging mills

Billet Heating Furnace Replaced in 16 Days

New two-zone reheating furnace erected outside building is moved 44 feet on antifriction bearings to permanent location in skelp mill train, thus reducing downtime of mill

REPLACEMENT of old mill equipment with new in the same location is not an unusual steel plant problem. However, a job recently completed in the skelp mill of Wheeling Steel Corp.'s Benwood, W. Va., Works includes an unusual procedure for reducing mill downtime.

Prior to this project, the Benwood skelp mill rolled steel billets approximately 3 inches thick by 30 feet long into pipe skelp less than ½-inch thick and elongated to lengths up to 1200 feet.

Decisions relative to improvement of billet production efficiency involved:

1. An increase of billet thickness from 3 to 4½ inches.
2. An addition to the skelp mill rolling capacity for accomplishing the additional reduction in rolling billets into pipe skelp.
3. An increase in mill speeds and billet heating capacity.

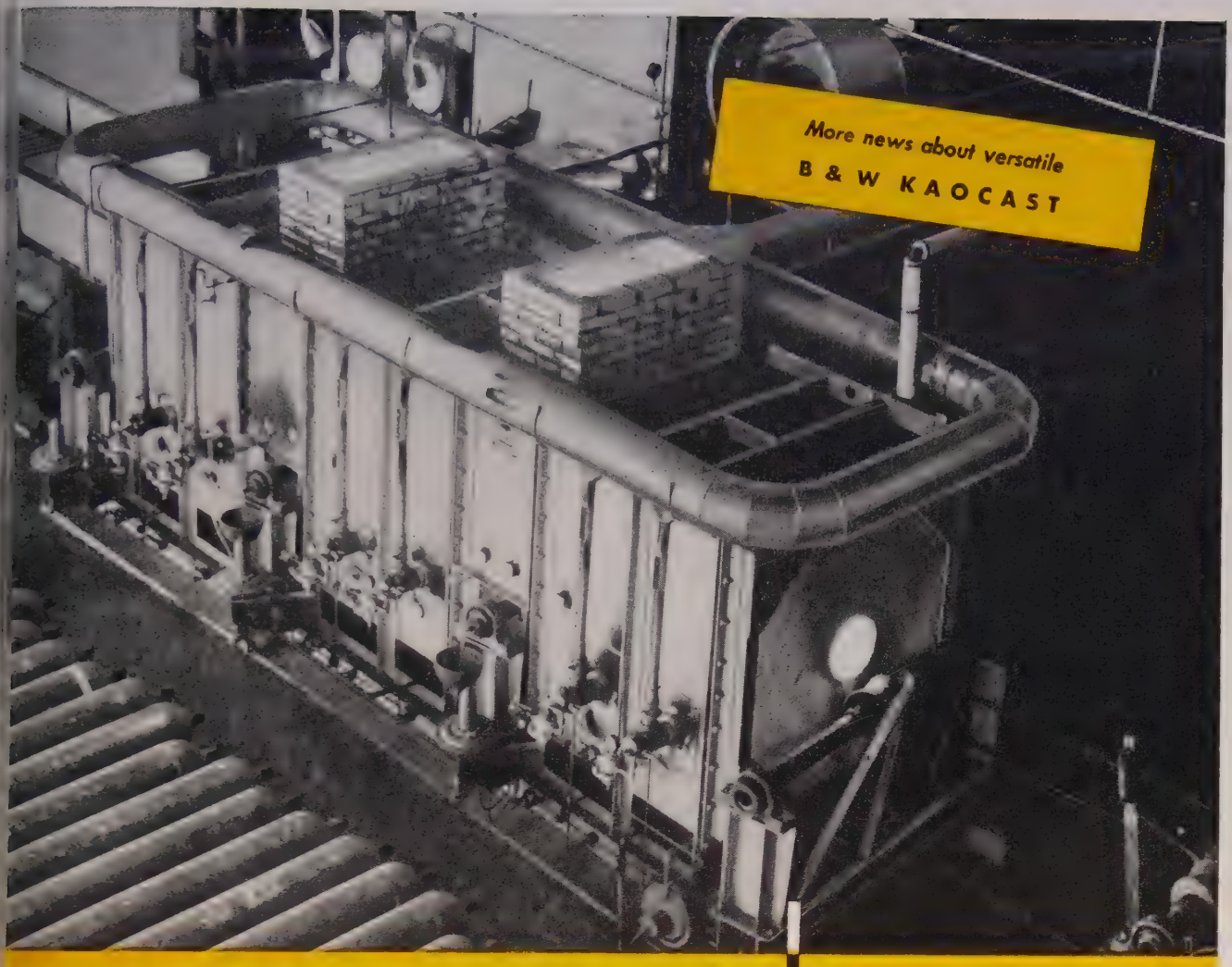
New Roll Stands Added—To prevent excessive mill overloading in rolling billets of increased thickness, it was necessary to purchase and install two additional 18-inch horizontal roughing stands complete with 1000 hp, dc motor drive and one vertical edging stand complete with 200 hp drive. To provide adequate space for the two additional roll stands and edger, part of the previous furnace location was used.

New gearing was provided for increasing speeds of the original ten horizontal and four vertical rolling mill stands. Installation of the gears was accomplished during normal mill repair periods. Completion of this change should provide an increase of approximately 20 per cent in mill capacity. The mill stands and edger were installed primarily during regular repair periods to cut downtime.

The major project undertaken in the skelp mill program was the construction of a new furnace designed for 80 tons of billets per hour. This furnace was constructed in the billet stocking area as close as practical to the old furnace without production interference.

Heavy track rails were imbedded into the surface of a temporary furnace foundation. The new furnace, 38 feet wide and 72 feet long, was mounted on 132 antifriction bearing supporting rollers which were uniformly distributed beneath the 1200-ton assembly of brick and steel. Furnace auxiliaries and mill additions were installed or partially assembled as space and mill operations would permit.

Demolition Starts—The old skelp mill came to a stop at 11:00 pm Dec. 20, 1952. Engineering, construction and maintenance personnel immediately became engaged in assigned tasks on an around-the-clock basis. Furnace auxiliaries were disconnected and removed. Excavation and demolition for



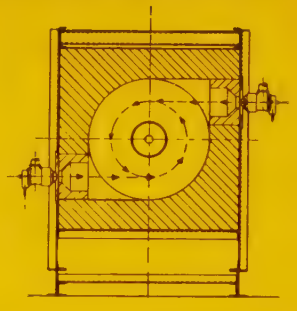
No maintenance for this B&W Kaocast Lining

AFTER 4 YEARS SERVICE

How practical is a complete castable furnace lining? This high thermal head normalizing furnace, one of the first of a new design, was lined with B&W Kaocast four years ago. Despite continuous 2500F temperatures, the Kaocast lining is still in excellent condition. Not one cent has been spent for maintenance.

This 3000 degree refractory castable performed so well because it has high resistance to spalling and slag attack, offers low volume change and practically no reheat shrinkage.

For a whole furnace lining or small special shapes, it pays to investigate versatile B&W Kaocast. It can be molded quickly by you, when you need it, directly in place or applied by cement gun. Put B&W Kaocast to work in your plant. Get all the facts from your B&W Refractories Engineer.



Cross section of R-S Products Corporation's "Hi-Head" Normalizing Furnace designed for Taylor-Wharton Iron and Steel Company, Easton, Pa.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42ND ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

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B&W REFRACTORIES PRODUCTS — B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment... Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

Coils of skelp coming from the mill are deposited vertically in cradles. Two continuous buttweld mills will turn them into ½ to 4-inch diameter pipe

clearance of the permanent furnace foundation ran into immediate trouble with "too much and too good" concrete in the old charger foundation. Cardox and dynamite finally removed this obstruction. Demolition of the old furnace, excavation for new mill additions and installations in adjacent areas were proceeding meanwhile.

The foundation for the new furnace was completed on Dec. 27, 1952, including track rails extending from the temporary foundation. Four hydraulic jacks were put in place on Dec. 29, 1952, to start the procedure of rolling the furnace along the track rails, and by 4:00 pm the next day the furnace had been moved 44 feet to permanent location.

Work then proceeded rapidly on the huge piping connections to recuperator and combustion equipment at one end of the furnace, billet charging and pushing equipment and waste gas piping at the other end, billet ejecting equipment on the one side and provision for hot billets to the mill on the other side.

Makeshift Furnace Used — A small temporary furnace, 5 feet wide and 30 feet long, was installed to bridge the space between the pushout door and the first stand of the existing mill in order that foundations for the new horizontal stands and edger could be installed while the mill was operating. During this interval the old-size billets were used.

Billets heated to 2300° F started passing from the new furnace and through the small furnace into the old mill at 7:00 am Jan. 6, 1953, after 16⅓ days out of production.

The new furnace is a two-zone fired furnace comprising a heating zone and a soaking zone. Each zone is fired by ten burners with Btu input divided approximately at a ratio of 2 to 1 between the heating and soaking zones respectively. Effective heating area under the heating zone (from centerline of charging door to face of heating zone burner wall) is 1310 square feet. The effective heating area from burner wall to centerline of discharge at the soaking zone is 490 square feet, culminating in a total heating surface of 1800 square feet. The furnace is designed to burn producer gas primarily, using auxiliary fuels of natural gas and fuel oil. Control equipment for each furnace zone is provided and includes gas ratio control and temperature control. Automatic stack control is also provided and actuated from the pressure tap in the soaking zone. The furnace has a Reintjes roof with 10 inches of firebrick and 2 inches of granular insulation. Billets are charged through the side of the furnace onto rollers and pushed down through the furnace by conventional pusher arm mechanism.

Double pass furnace auxiliary equipment includes metallic needle type Salem recuperators and three combustion air fans, each driven by a 75-hp motor. Each fan has a capacity for handling a standard air volume of 12,000 cfm at 21 inches static pressure when driven at a speed of about 1180 rpm.

Mill Comprises 17 Stands—Th mill was originally a Mesta desig comprising a total of ten horizon tal 2-high roll stands and four ver tical edging mills, to which ha been added two horizontal standh and one edger, making a total of i horizontal stands and five edgers The first two stands of the origina mill are driven by one 500-hp mo tor. The next four horizonta stands are driven by one 2000-h motor. Of the next four stands each unit of two stands is drive by one 2000-hp motor. Edgers ar located between stands 2 and 3 4 and 5, 6 and 7, and 8 and 9. Th additional two stands were in stalled at the furnace end of th line, with the new edger betwee these stands and the first stand o the existing mill.

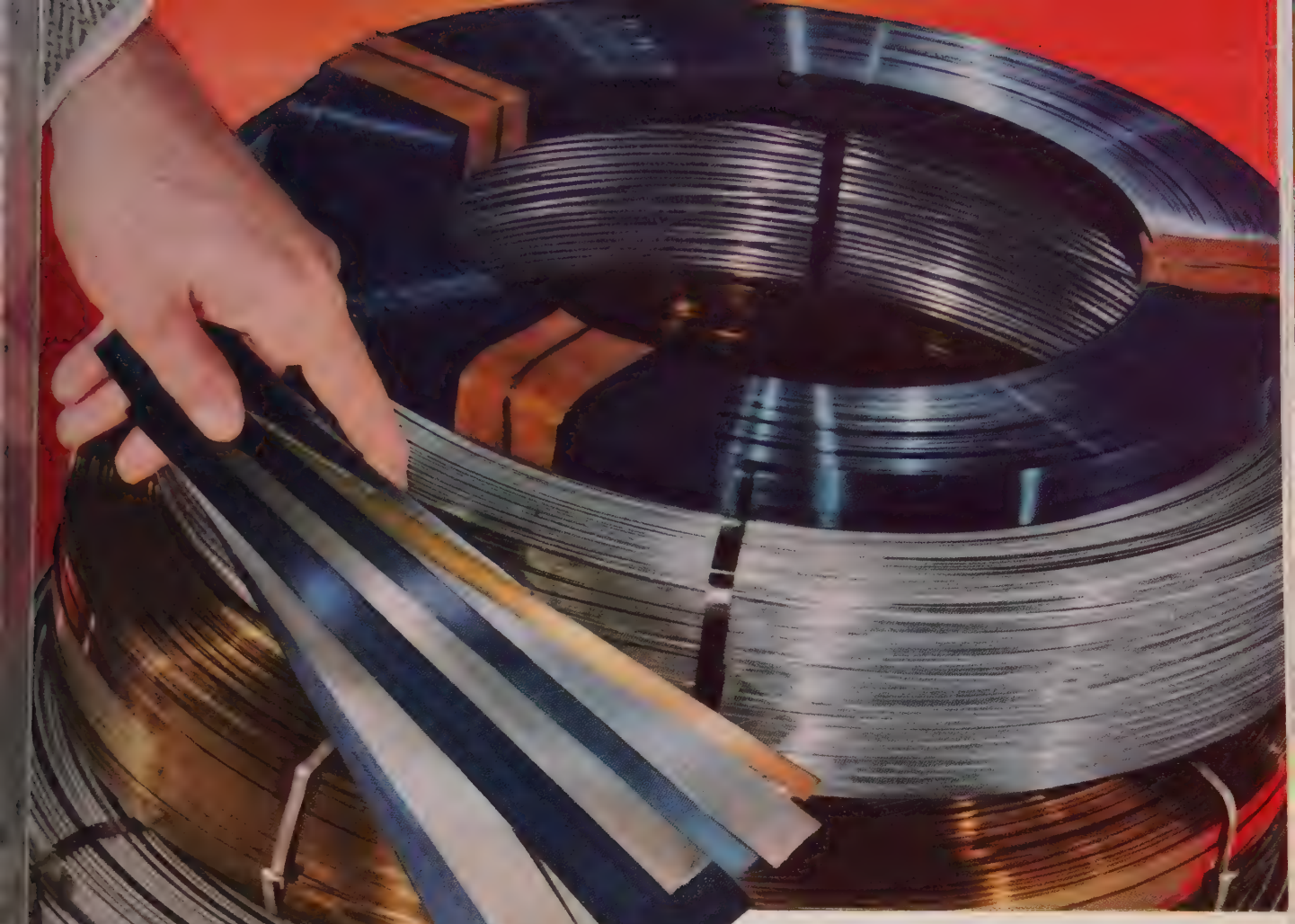
The product of this mill is coil for two continuous buttweld pip mills which produce pipe in siz ranges from ½ to 4 inches. Skelk for these mills is produced entirel in coil form by two Morgan ree type coilers. Maximum coil d ameter used is 56 inches with a 2 inch diameter reel center.

The expected average hourl rate of the new mill is approx mately 55 tons with a maximum delivery speed of 1560 fpm. Pres ent billet sizes range from 4¼ 5¾ inches to 3¾ x 15⅞ inche from which are produced skel sizes from 5 x 0.100-inch to 15⅞ 0.330-inch. Coil lengths rang from 308 to 1424 feet.

ASTM Meets for 56th Time

Eight technical symposiums an many other technical papers on wide range of subjects in the fiel of engineering materials are on th program of the 56th annual mee ing of the American Society fo Testing Materials at Chalfonte Haddon Hall, Atlantic City, N. J June 28 to July 3, inclusive.

Important feature of the pro gram will be the 27th Edgar Mar burg Lecture (Wednesday after noon, July 1) to be given by Fred erick D. Rossini, international au thority in the field of physical chemistry, Director of the Amer can Petroleum Institute Researc Laboratory and Head of the De partment of Chemistry at the Car negie Institute of Technology.



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EVERY MANUFACTURER who tries Roebling high carbon flat spring steel discovers the same thing... that this spring steel is absolutely in a class by itself for dimensional and mechanical uniformity... for speeding production and cutting down rejects.

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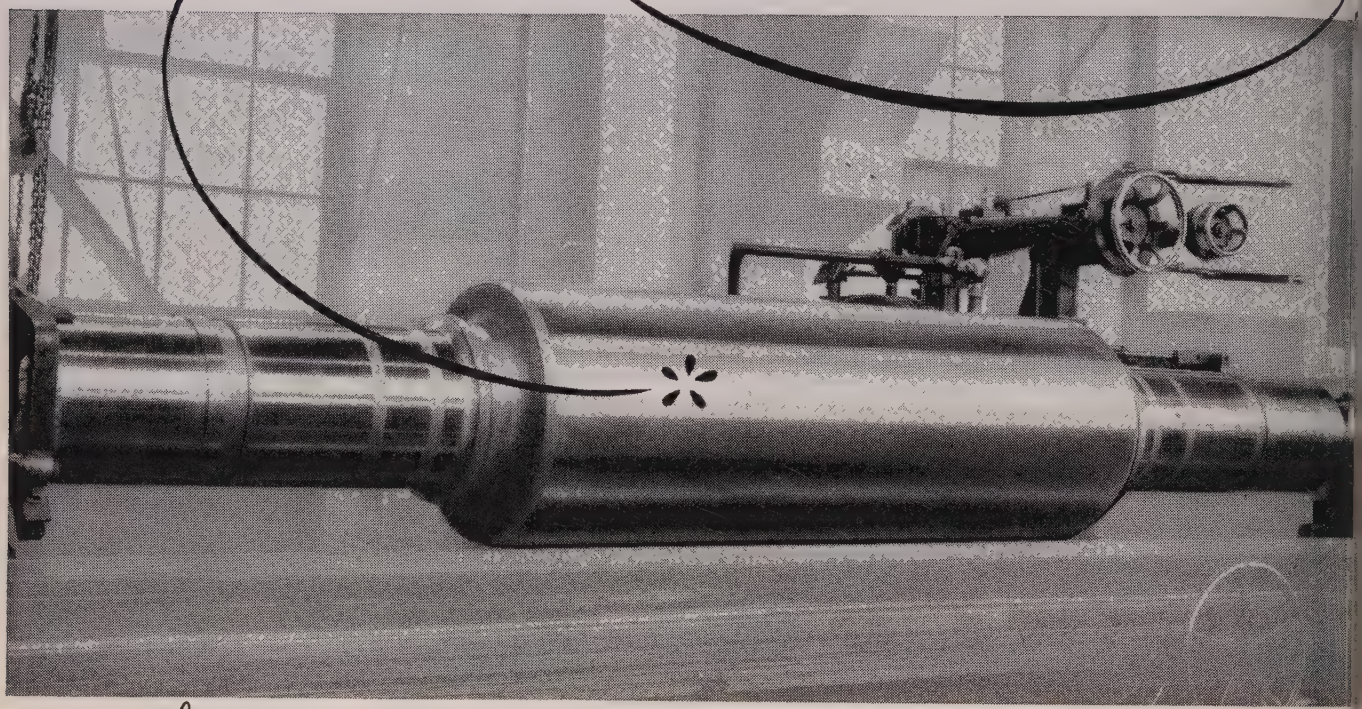
PHOTO BY MC MANUS

For longer service life and higher tonnages . . .



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When you specify Birdsboro Rolls, you get rolls made to fit your specific needs. That is why Birdsboro Rolls have such an outstanding reputation for giving longer roll life, greater tonnages, and more rolling accuracy. Get in touch with Birdsboro if you want individually designed, *highly specialized* "copper bearing" alloy steel and alloy iron rolls.

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nc-Protected Talkers

Electronic components are kept separate but compact by low-cost zinc application

NCE the Dictaphone dictating achine went electronic, design d engineering problems have ntered around shielding close-positioned electronic components. To prevent unwanted reactions tween circuits, these parts must e kept electrically separate while aintaining a mechanically com-act arrangement. On some models, nother important factor is a eight limitation imposed by need r portability.

Cost, Weight Saving—Such parts s the microphone hand set, am-ifier cover and other important

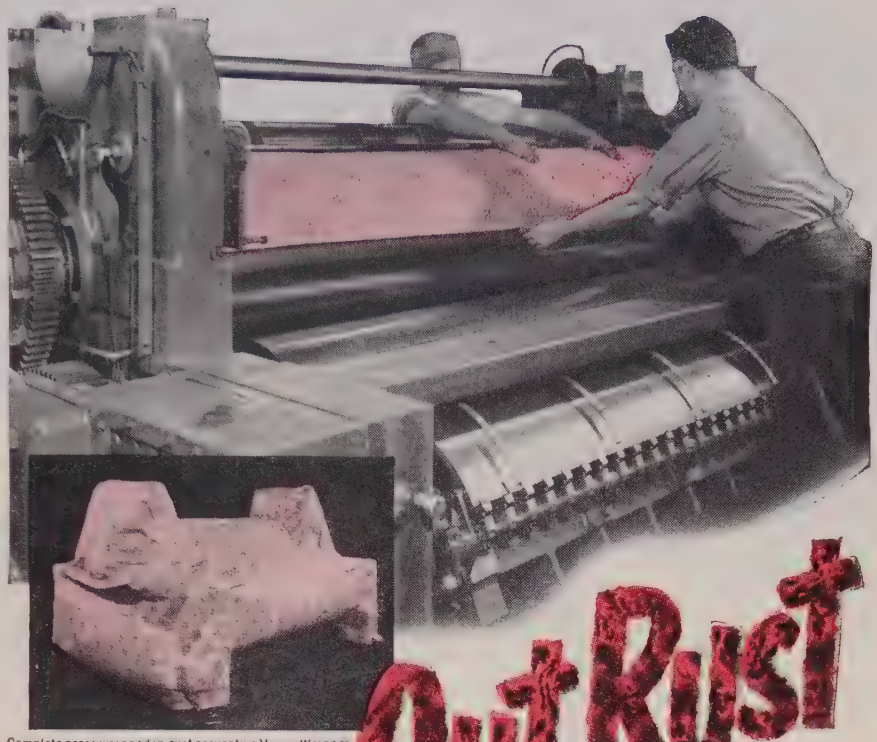
METALLIZING PIVOT BLOCKS
. . . lower cost, lighter weight

omponents are made of bakelite. hough a nonconductor, it is elec-rically transparent to radiations hat occur in the audio-frequency ange.

To overcome this problem, the in-ides are metallized with zinc and oatings grounded to the chassis. n this way, the same effect is ained as would be if solid metal were used, at about one-quarter he cost and with comparable weight saving.

Producing Blocks—In the oper-ation shown above, reproducer piv-ot blocks are in quantity produc-tion at Dictaphone Corp.'s Bridge-port, Conn., plant. In this opera-tion, portions of components not to be shielded are masked and ten blocks held in a special fixture are sandblasted one at a time. The job

How Miehle Cuts Packaging Costs, Improves Customer Service!



Complete press wrapped in rust preventive Vapor-Wrapper

Wrap Out Rust

with **NOX-RUST Vapor-Wrapper**

New Chemically Active Paper Blocks Rust in One Simple Operation!

MANY COMPANIES in a wide range of industries have discovered the advantages of using new NOX-RUST Vapor-Wrapper. Easy to use as wrapping paper, this remarkable new product rust-proofs everything from delicate instruments to huge printing presses . . . cuts costs while delivering products ready for use!

Miehle Printing Press & Mfg. Co., user of Vapor-Wrapper, says: "Vapor-Wrapper saved 96 man hours on just one shipment! It is more economical, cleaner, more convenient than anything we've used."

The chemical *within* Vapor-Wrapper—an exclusive development of NOX-RUST laboratories—makes moisture-laden air non-corrosive . . . *without the need for an air-tight package* . . . without deposits forming on the metal. Cut costs and improve service in *your* business with Vapor-Wrapper!

Vapor-Wrapper conforms to Military Specification MIL-P-3420, Packaging Materials, Volatile Corrosion Inhibitor Treated.

Clip to your letterhead and write for facts today!

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Please send me your booklet on Vapor-Wrapper, the rust-preventive paper that *wraps out rust.*

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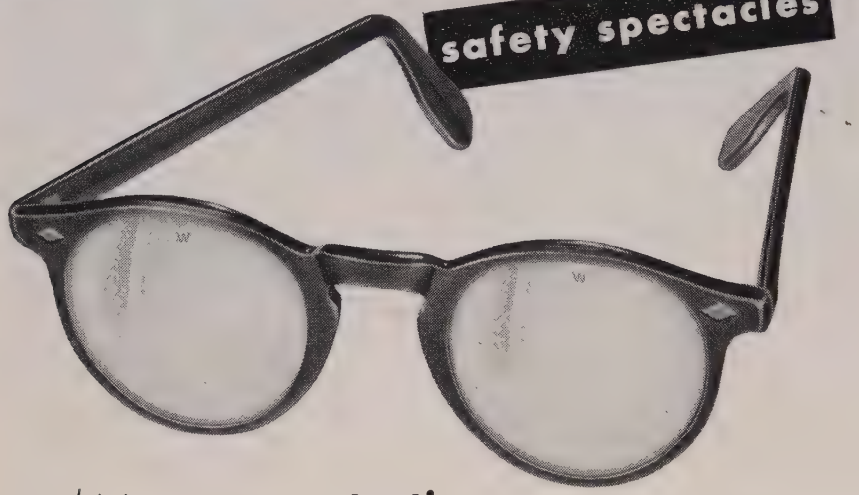

combining ***eye protection*** *with the* ***color styling*** *workers want today!*

Style WB—choice of new spatula temples as shown, or half-plastic, half-cable type temples. Style WBS—has matching bronze sideshields.

Not one, but *two* new features make these sturdy safety spectacles an exceptional value. Their distinctive bronze color gives them a pleasing appearance. And the new non-flammable frame is toughest plastic made for spectacles—won't chip, crack or craze—and has greatest shock resistance.

Willson Bronze styles feature the "keyhole" bridge and popular Hi-Line® temple. Brand-new wire core spatula temples add an extra comfort feature you'll welcome. They're easy to adjust for a perfect fit!

These attractive spectacles are available with Super-Tough® heat treated glass lenses or Willson Plas-Tough® plastic lenses. A full range of eye and bridge sizes make these spectacles ideal for use with prescription lenses. See your nearest Willson distributor for these new Willson Bronze styles—or write for descriptive bulletin.

For those who prefer flesh-colored plastic spectacles, with the same safety and comfort features and choice of temples, see Style WK and Style WKS.

More than 300 Safety Products *Carry This Famous Trademark*

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Established 1870

WILLSON PRODUCTS, INC., 233 Washington St., Reading, Pennsylvania

Carbon Arc Cutter

Versatile tool that gouges and cu metals using only a carbon arc an compressed air was pressed into se vice when Wyerhaeuser Timber C needed 176 railroad wheels witho flanges. The firm used an Airca torch, generally a maintenance too to do the job quickly and neatly. On man converted four wheels a da

consumes a total of 3 minutes.

Pivot blocks are then transferre to another fixture and metallize 0.002 to 0.003-inch thick with zin

Motor Giant Ready To Spin

An 83,000-hp motor has be installed at the Arnold Enginee ing Development Center, Tull homa, Tenn. It is the first maj step in assembly of the 216,000-h electric drive for the new transon and supersonic wind tunnels f the U. S. Air Force.

The giant synchronous motor one of two such units built by th Westinghouse Electric Corp., I Pittsburgh, Pa. Second unit will installed in the near future, alon with two 25,000-hp induction m tors.

Still under construction at th Westinghouse plant in Sunnyval Calif., are the five compresso these four motors will drive. T compressors, said to be the large ever built, will have blades tw feet wide and six feet long moun ed on a spindle 18 feet in diamete Each blade weighs almost tw thirds ton, and will rotate at speed of 600 rpm. When the moto and compressors are completely a sembled, they will comprise t world's largest rotating machine.

PHOENIX METAL ROLLS are color marked for specific uses in rolling . . .

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BILLETS
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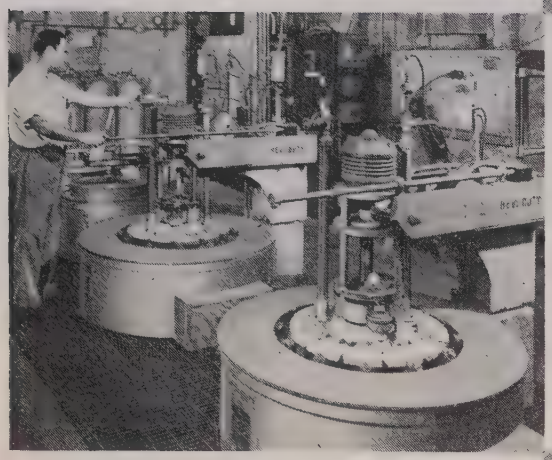
- Pittsburgh Grade Special Process
- Phoenixloy
- Phoenix Metal Master
- Phoenix "A" Alloy Steel
- Phoenix "A" Special Alloy Steel
- Carbon Steel

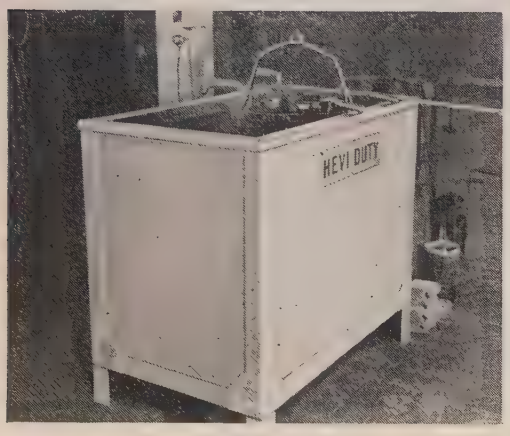
HEVI DUTY

HEAT TREATING FURNACES for INDUSTRY



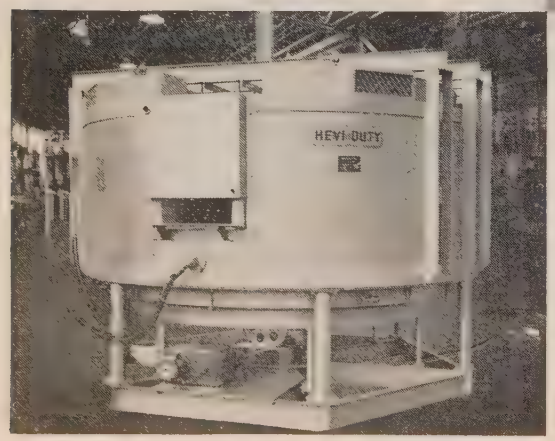
HEVI DUTY VERTICAL RETORT FURNACE

This versatile furnace may be used for all major heat treating operations. Multiple zone temperature regulation and the positive pressure atmosphere control assure uniform results from heat to heat. Bulletin HD-646.



HEVI DUTY OIL BATH TEMPERING FURNACE

Even heat at exact temperatures. Continuous agitation of the oil gives the surface of the bath an appearance of boiling though the bath is without gas pockets. Bulletin HD-336.



HEVI DUTY ROTARY HEARTH FURNACE

Designed to operate at temperatures up to 2500° F. Many of these furnaces are heating jet engine parts prior to forging. A protective atmosphere prevents scale and the decarburization of high temperature alloys. Maximum capacity is 1500 pounds per hour. Bulletin 153.

At your service are experienced Hevi Duty Engineers able to recommend that exact furnace for your production system.

HEVI DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively

Dry Type Transformers *Constant Current Regulators*

Combined Cutter

To fill a square-end shell forgin[g] stock order as quickly as possible[,] one mill operator combined cuttin[g] equipment into an effective produc[-] tion cutting installation. Here, a[n] Oxweld C-54 cutting blowpipe make[s] the cut, moved into the work zone b[y] a CM-37 machine carriage. Except fo[r] billet positioning, the Linde Air Proc[-] ucts Co. setup works automaticall[y]

Non-Galling Stainless

AVAILABILITY of a new stainless alloy, V2B, is announced by Cooper Alloy Foundry Co., Hillside, N. J. Combining high hardness, nongalling characteristics and excellent corrosion resistance, this material was developed in answer to demand for a stainless steel that would not gall or seize in corrosive service.

The alloy is a hardenable 18-8 type stainless steel, containing copper, molybdenum, silicon and a small amount of beryllium. It is readily machinable in the quenched annealed state, and may be hardened by a low temperature heat treatment which produces no distortion and only a light heat tinting discoloration which may be readily removed if necessary. In the annealed condition, the material is easily welded using special welding rods.

In addition to its use in a variety of corrosive applications, where high hardness and nongalling features are required, the alloy does not over-age at elevated temperatures and may therefore be used

Faster Drawing

As a part of its long-range mill improvement program, American Brass Co. is installing a 75,000-pound chain draw bench at its Torrington, Conn., rod mill. Machine will draw two rods at a time up to 1½ inches diameter, or singles up to 4½ inches, at speeds to 132 fpm. Bench will be connected by conveyor to a finish-cutting saw, eliminating intermediate handling

safely in steam applications and at temperatures that range up to 1400° F.

Resistance in the hardened condition to sulphuric, hydrochloric and phosphoric acids and their salts, is said to exceed that of most precipitation hardenable alloys, and even that of type 316, the molybdenum-bearing stainless alloy. In nitric acid it also compares favorably to the other hardenable grades, but is not quite the equal of types 304 or 316 stainless.

Its high hardness and strength, coupled with resistance to corrosives, plus its erosion resisting and non-galling characteristics, suggest many applications. Among them: Valve disks, plug cocks, shaft sleeves, impellers, pump casings, wearing rings, poppets, conveyor links, rollers and gear blanks.

Plastic Materials Detailed

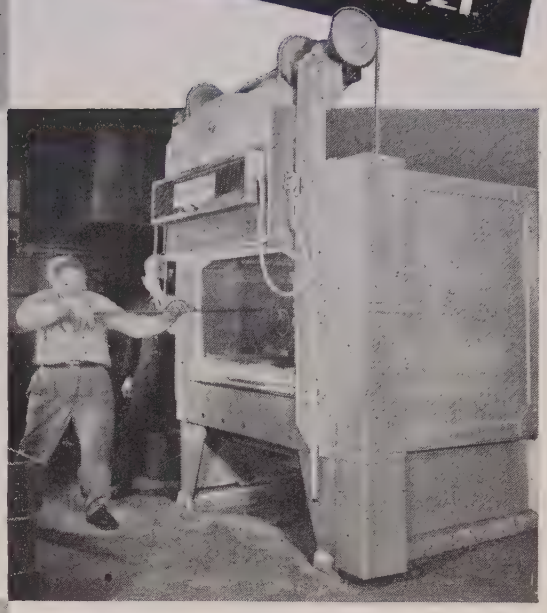
Greatest growth in industrial plastics will be in the field of extruded, laminated and reinforced materials. This summary prefaces an application study, "Plastic Construction Materials," prepared by Atlas Mineral Products Co. and offered free on request to its offices at Mertztown, Pa., or Houston 1.

HEAT TREATING FURNACES for INDUSTRY

HEVI DUTY

HEVI DUTY BOX TYPE FURNACE

Hardening piston rings at 1850° F. is one exacting use of this furnace. Hevi Duty design and construction assures uniform and fast heating with low maintenance costs in electric furnaces for many applications.

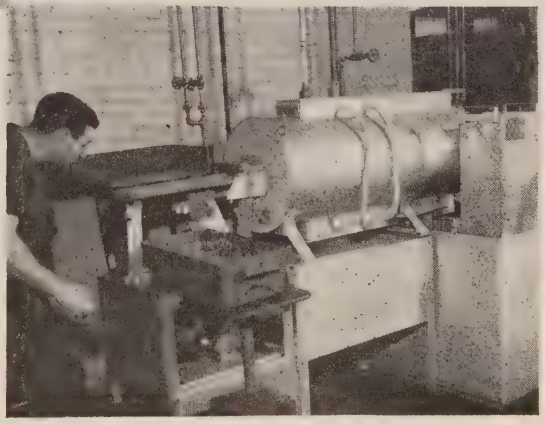


HEVI DUTY SALT OR LEAD BATH POT FURNACE

Salt bath hardening, tempering, and cyaniding without scale are major applications of the Hevi Duty Electric Pot Furnace. A case of .004 to .005 is obtained in 15 to 20 minutes on parts immersed in cyanide salt at 1550° F.

HEVI DUTY SHAKER HEARTH FURNACE

This modern production tool will either carburize, nitride, dry cyanide, or bright harden up to 150 pounds of work per hour. The work passes through the furnace and drops directly into the oil quench. Results are clean, uniformly treated parts with minimum distortion. Bulletin HD-850.



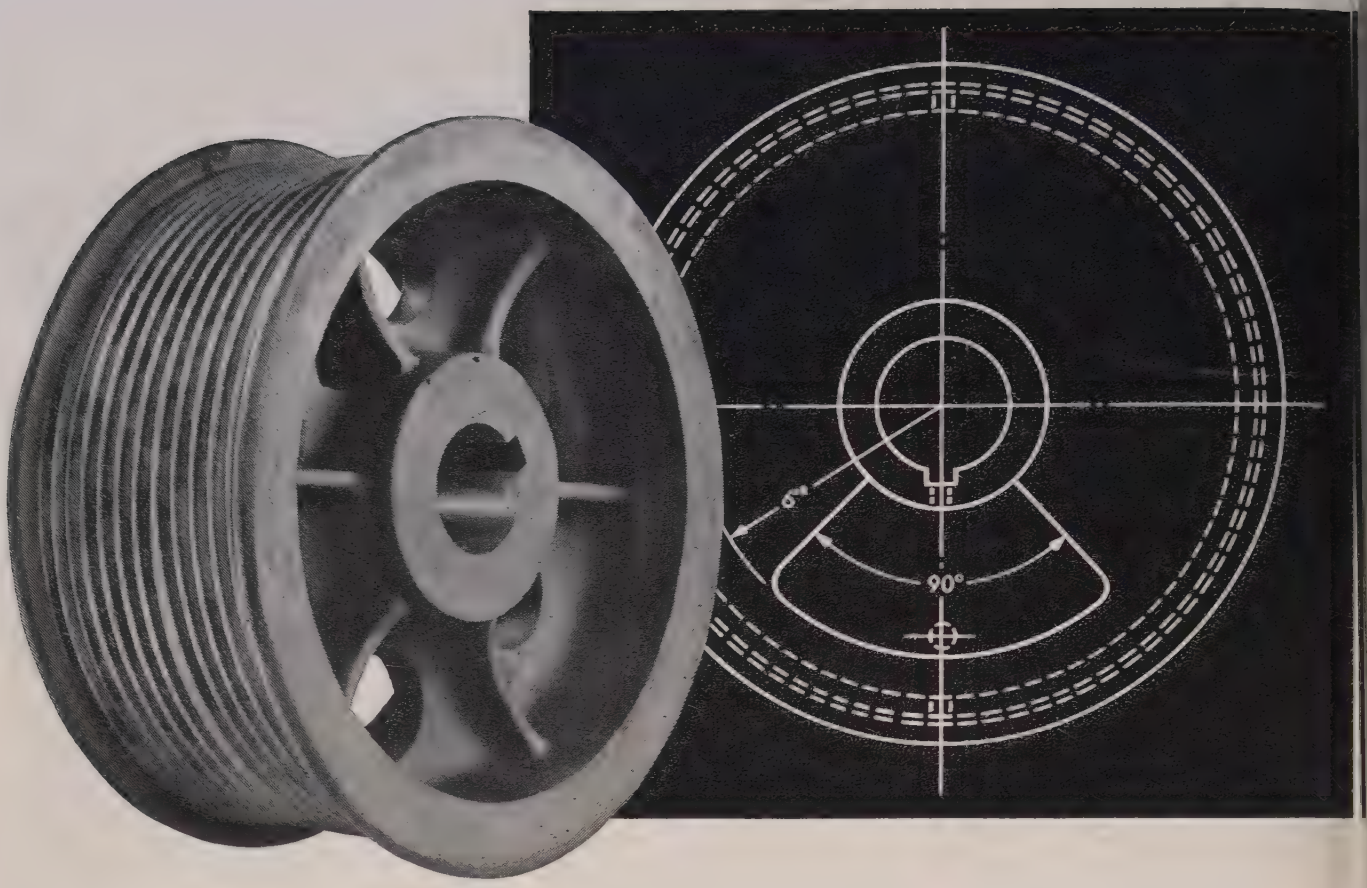
Hevi Duty Electric Company designs, and builds many types of electric heat treating furnaces and gas generators. Call on us to help solve your heat treating problems.

HEVI DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively

Dry Type Transformers *Constant Current Regulators*



Costly to fabricate ECONOMICAL TO CAST IN GRAY IRON!

GRAY IRON
Characteristics Include:

- Castability
- Rigidity
- Low Notch Sensitivity
- Wear Resistance
- Heat Resistance
- Corrosion Resistance
- Durability
- Vibration Absorption
- Machinability
- Wide Strength Range

The cable drum, shown above, was formerly produced by using plates of various thickness—cutting, assembling, welding and finally machining. Valuable and costly man-hours were expended in co-ordinating the efforts of the several mechanics involved in these operations. Thus, supervisory costs were added to high fabrication costs.

By redesigning the part as a Gray Iron casting, a cost saving of 41% per unit was effected. On a typical order involving 20 castings, the net saving to the customer was $197, *after* initial pattern cost had been written off. Note that grooves are *cast in* instead of machined, effecting a substantial saving in machining time.

In addition to these savings, much longer operating life can be expected, because of Gray Iron's superior resistance to metal-to-metal wear and galling.

Don't miss opportunities like this to save man-hours, cut costs, and increase operating life by *redesigning in Gray Iron!* Write for technical information on advantages of the Gray Iron casting process.

Make it Better with Gray Iron • **Second largest industry in the Metal-working field**

GRAY IRON FOUNDERS' SOCIETY, INC.
NATIONAL CITY-E 6th BLDG. CLEVELAND 14, OHIO

Portable Heat Check

Unsatisfactory temperature readings in diesel-electric locomotive bearings are eliminated by Delaware & Hudson Railroad with these hand pyrometers. The road reports bearings' oil bath, tough on some pyrometers, has no effect on this GE type FH-1

Chromic Acid Recovery

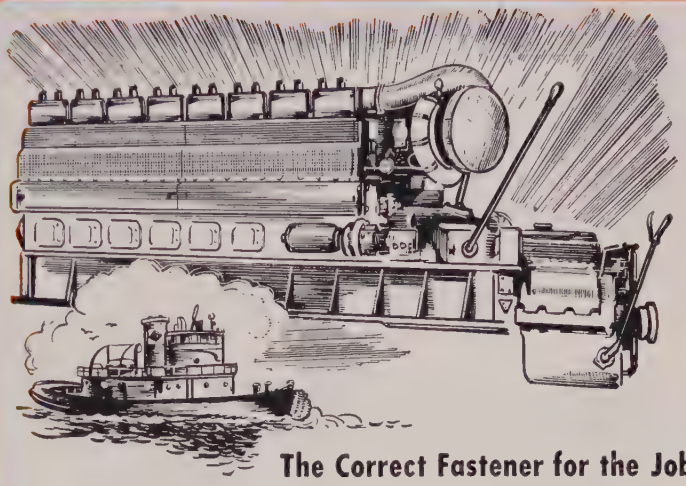
REMOVAL or recovery of chromic acid from rinse water is a development which will be of interest to platers. Barnstead Still & Sterilizer Co., Boston, has developed a process whereby rinse water can be passed through ion-exchange resins to effect nearly 100 per cent chrome recovery.

Advantages to the plating shop are twofold. First, the troublesome chromic acid waste disposal problem is eliminated. Second, the expensive and often scarce chromic acid is recovered for reuse.

Anion Resins—In the process, the rinse water is first passed through a cation column to remove aluminum and copper and then through an anion resin bed which removes the chromic acid. The chromic acid is then recovered in the regeneration process. Tests show that the same resins can be used economically for 100 or more cycles. In most instances, savings in chromic acid will more than repay the operating costs of the entire process, which means that the waste disposal problem can be solved at no cost.

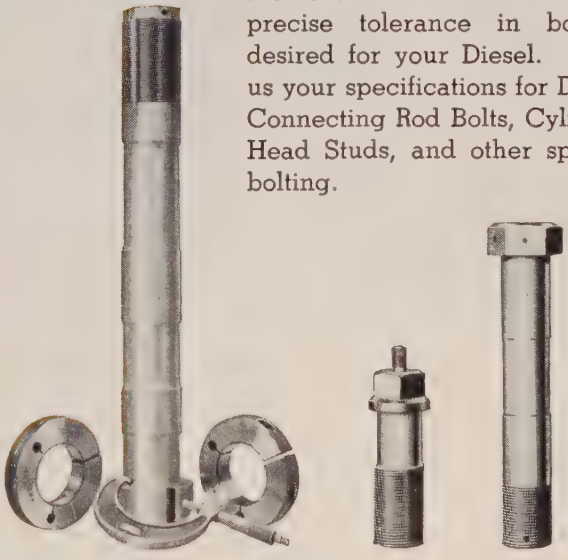
In addition, as a byproduct of the process, the user obtains a supply of demineralized water which he can use to good advantage in rinse tanks and solutions.

For DEPENDABILITY IN DIESEL ENGINES



The Correct Fastener for the Job

For over 38 years Erie has manufactured bolts and studs to the specifications of Diesel Engine builders. This specialized experience gained in working with leading Diesel designing engineers assures you of getting the exact materials and the precise tolerance in bolting desired for your Diesel. Send us your specifications for Diesel Connecting Rod Bolts, Cylinder Head Studs, and other special bolting.



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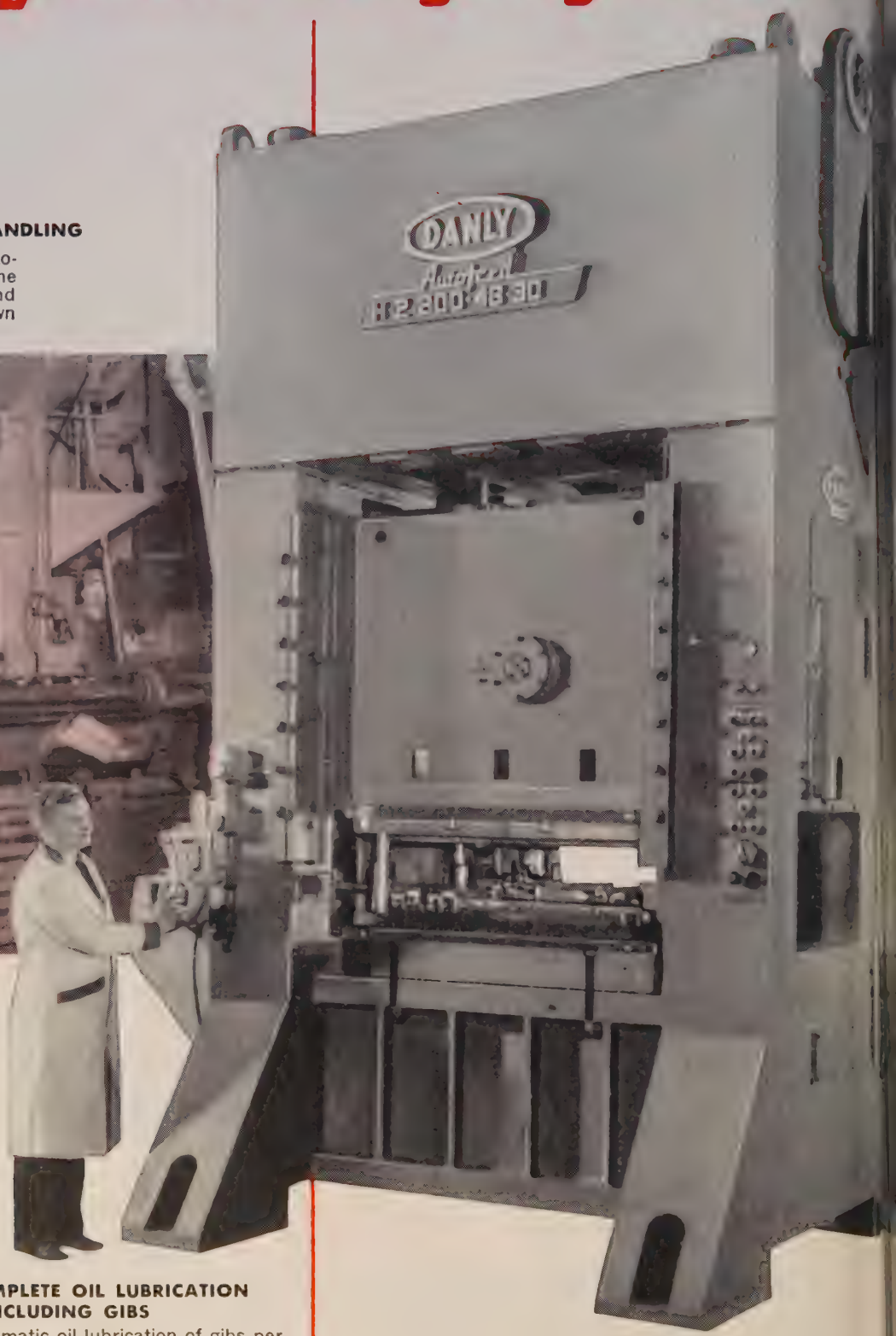
CARBON • BRONZE

Representatives in Principal Cities.

stamping costs are going down!

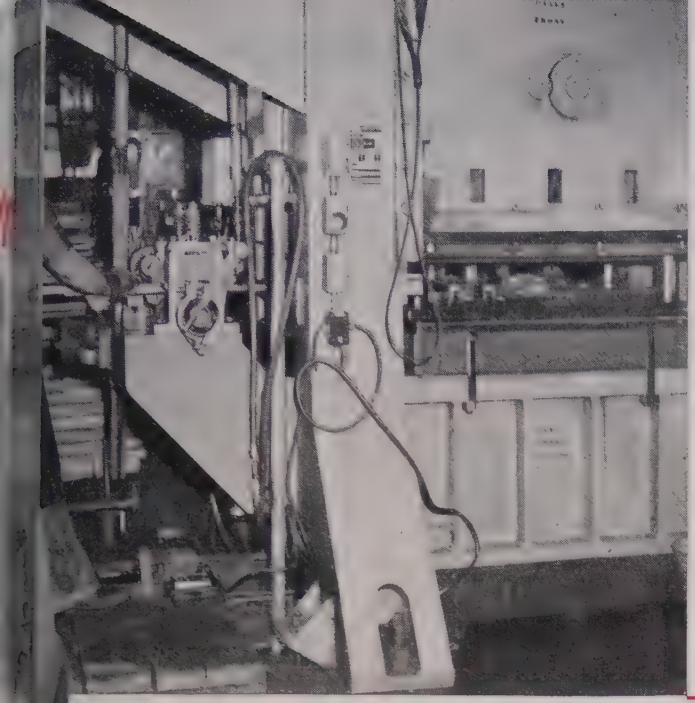
CONVEYERIZED PIECE PART HANDLING

Blanked and punched side bars, together with scrap, drop through the press bed onto a divided conveyer and are carried to separate tubs as shown below.



COMPLETE OIL LUBRICATION —INCLUDING GIBS

Automatic oil lubrication of gibs permits extremely close alignment of slide and more accurate guiding of dies—greatly decreasing die wear. Clean filtered oil continuously supplied to all wear surfaces is only one of Danly's outstanding "preventive maintenance" features.



AUTOMATIC FEEDING
In this setup, alloy steel side bars 5/16" thick are blanked and punched in a multiple stage die at a high rate of speed. Dies like these last 200% longer in Danly Presses.

DANLY PRESSES *do it!*

JEFFREY MANUFACTURING COMPANY REPORTS:

- *50% faster production*
- *200% longer die life*
- *greatly decreased maintenance*

The 200 ton Danly Autofeed Press shown here has been in continuous daily operation at the Jeffrey Manufacturing Company, Columbus, Ohio, for well over a year — *without maintenance* of any kind other than routine oil change. Steady performance like this and the faster stroking permitted by Danly's rigid, precise construction have raised average production of steel conveyor chain side bars from 3,000 per hour to 4,500 per hour.

Dies are lasting longer, too. In one case a 3-stage die required grinding every 10,000 pieces — now, in the Danly Autofeed Press, the same die turns out 30,000 pieces between grinds.

A story like this is typical of Danly Press performance in leading stamping plants throughout the country — and proof that Danly Presses reduce stamping costs!

DANLY®

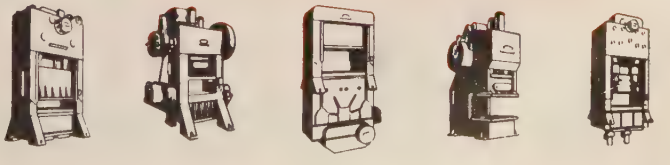
HANICAL PRESSES . . . 50 TO 3000 TONS
RAULIC METALWORKING EQUIPMENT

SEND FOR YOUR COPY TODAY!

. . . see how you can put Danly Presses to work in your plant to increase production and cut costs.

DANLY MACHINE SPECIALTIES, INC.
2100 South Laramie Avenue, Chicago 50, Illinois

It costs less to run a DANLY PRESS!



Single Action Straight Side | Autofeed | Underdrive Single, Double Triple Action | Gap Frame | Double Action Straight Side

CALENDAR
OF MEETINGS

June 22-25, National Industrial Advertisers Association: Annual meeting, William Penn hotel, Pittsburgh. Association address: 1776 Broadway, New York. Executive secretary: Blaine G. Wiley.

June 22-27, Railway Supply Manufacturers Association: Exhibit and convention, Atlantic City. Association address: 60 E. 42nd St., New York 17. Secretary: A. W. Brown.

June 28-30, Alloy Casting Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 32 Third Ave., Mineola, N. Y. Secretary: E. A. Schoefer.

June 28-July 2, American Society of Mechanical Engineers: Semi-annual meeting, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

June 29-July 3, American Society for Testing Materials: Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society address: 1916 Race St., Philadelphia. Secretary: Robert L. Painter.

July 6-17, Summer Course in Product Design: Massachusetts Institute of Technology, Cambridge 39, Mass. Information: Director of Summer Session, Room 3-107, MIT.

July 23-24, Truck-Trailer Manufacturers Association Inc.: Annual summer meeting, Edgewater Beach hotel, Chicago. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

August 17-19, Society of Automotive Engineers: International West Coast meeting, Georgia hotel, Vancouver, B. C. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

August 23-26, National Automatic Merchandising Association: Annual convention and exhibit, Hotel Conrad Hilton, Chicago. Association address: 7 S. Dearborn, Chicago. Secretary: C. S. Darling.

September 1-4, American Institute of Electrical Engineers: Pacific general meeting, Hotel Vancouver, Vancouver, B. C. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

September 6-11, American Chemical Society: Fall meeting, Hotel Conrad Hilton, Chicago. Society address: 1155—16th St., NW, Washington 6. Assistant secretary: R. M. Warren.

September 10-12, Rocky Mountain Management Club: Rocky Mountain industrial exposition, University of Denver arena. Club address: 1031 15th St., Denver 2. Executive secretary-treasurer: Harold S. Craig.

September 13-16, Electrochemical Society Inc.: Fall meeting, Ocean Terrace hotel, Wrightsville Beach, N. Carolina. Society address: 235 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

September 14-16, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: Charles F. Weil.

September 20-23, Packaging Machinery Manufacturers Institute: Annual meeting, Skyto Lodge, Skytop, Pa. Institute address: 341 Madison Ave., New York 17. Secretary-treasurer: Helen L. Stratton.

September 20-23, American Institute of Wholesale Plumbing & Heating Supply Associations Inc.: Annual convention, Hotel Waldorf-Astoria, New York. Institute address: 402 Albee Bldg., Washington. Executive secretary: George T. Underwood.

September 21-22, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

September 21-23, Truck Body & Equipment Association Inc.: Annual meeting, Sheraton-Gibson hotel, Cincinnati. Association address: 1122 DuPont Circle Bldg., Washington 6. Executive manager: Arthur J. Nuesse.

September 21-24, American Mining Congress: Annual metal and nonmetallic mineral mining convention, Olympic hotel, Seattle. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

September 21-25, Instrument Society of America: National instrument conference and exhibit, Hotel Sherman, Chicago. Society address: 1319 Allegheny Ave., Pittsburgh. Manager: P. V. Jones Jr.

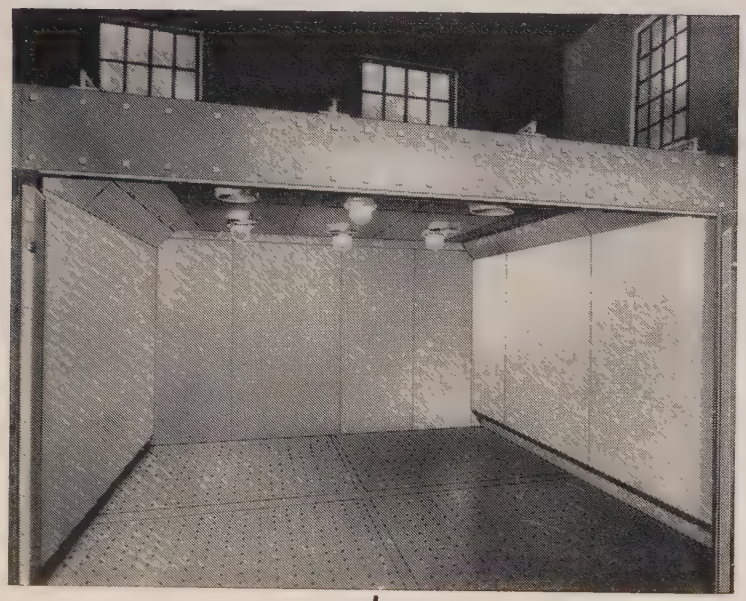
September 23-26, National Association of Foremen: Annual convention, Milwaukee. Association address: 321 W. 1st St., Dayton 2, O.

September 28-30, Association of Iron & Steel Engineers: Annual meeting, Hotel William Penn, Pittsburgh. Association address: 1010 Empire Bldg., Pittsburgh. Managing director: T. J. Ess.

September 28-30, National Electronics Conference Inc.: Annual conference, Hotel Sherman, Chicago. Conference address: 852 E. 83rd St., Chicago. Executive secretary: Karl Kramer.

September 29-October 3, Society of Automotive Engineers: National aeronautic meeting, aircraft engineering display and aircraft production forum, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

MACLEOD
ABRASIVE BLAST EQUIPMENT



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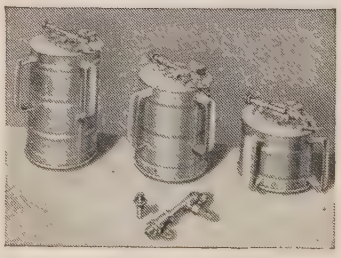
Available in standard sizes or in special sizes to meet individual needs. Equipped with removable air baffles for longer life. Can be had with slot for chain-fall hoist or with rails for blast cars. Macleod manual, semi-automatic, and fully automatic blast machines with non-choke type conveyors and latest-design elevators are available for all sizes of rooms.



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Suction type, for spraying liquid facing on dry sand molds or oil on dry sand cores. Available steel, brass, or copper —1 to 5 quart capacities.

For descriptive literature write Dept. S

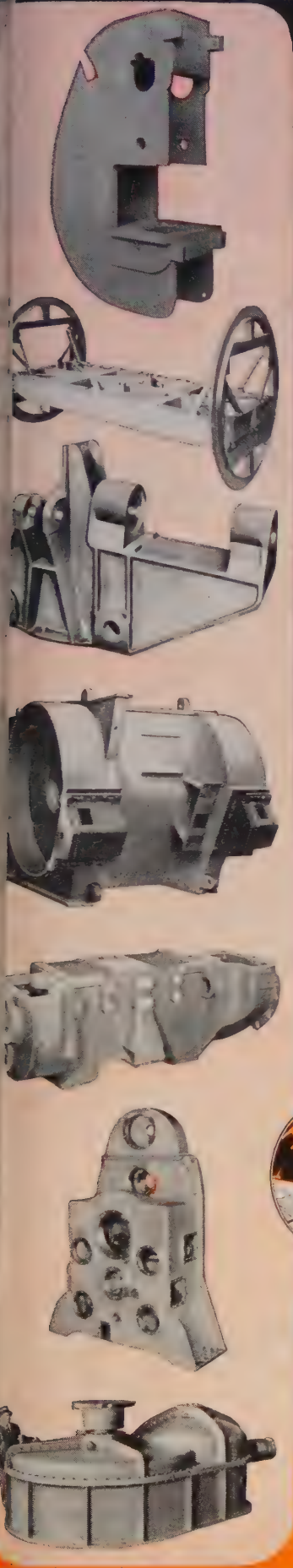
The MACLEOD Company

BOX 452, SHARONVILLE, OHIO ESTABLISHED 1897

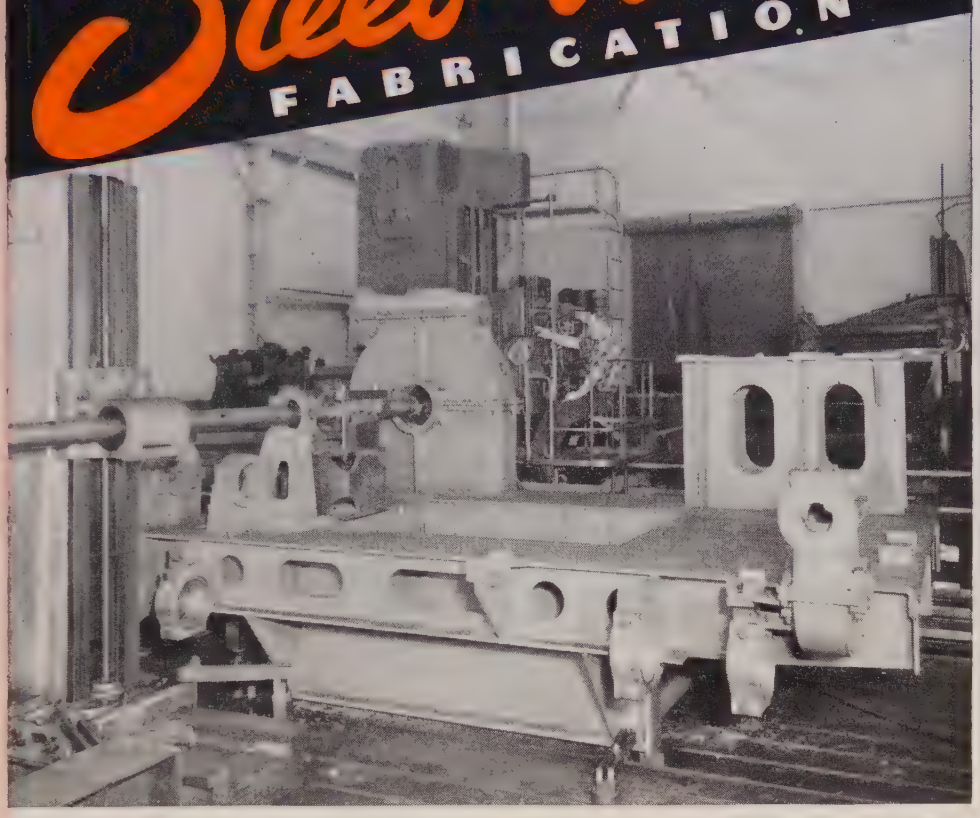
How To Care for Rubber Hose

Bulletin on the care of rubber hose is ready for distribution by Hewitt-Robins Inc. Called "Tips on Hose Care," it tells what to do and what not to do in the use and storage of various kinds of hose, including steam, fire, oil, gasoline, water, air, suction and sandblast.

A copy may be obtained by writing to Hewitt-Robins Inc., 240 Kensington Ave., Buffalo, N. Y.



Steel-Weld FABRICATION



Use WELDED STEEL for Greater Strength with Less Weight!

Above you see a Steel-Weld Fabricated trolley frame for a heavy crane. This and the units illustrated at the left are typical of thousands of welded steel parts and assemblies produced by Mahon for many industries throughout the country. Facilities are available within the Mahon plant to do the complete job from the drawing board to finished machining. If you have parts or assemblies that could be redesigned and produced to better advantage through Steel-Weld Fabrication, or, if you require a limited number of large, heavy pieces in which pattern costs are a consideration, you can turn to Mahon with complete confidence. You will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling facilities to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures a smoother, finer appearing job embodying every advantage of Steel-Weld Fabrication. See Mahon's Insert in Sweet's Product Design File, or write for further information.

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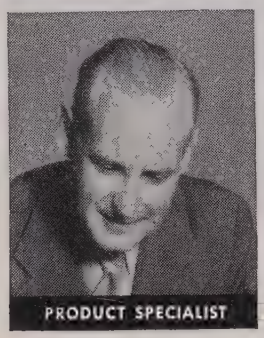
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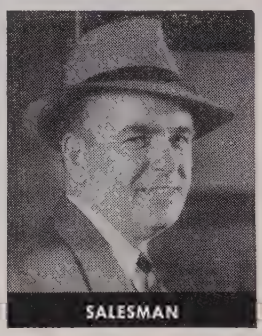
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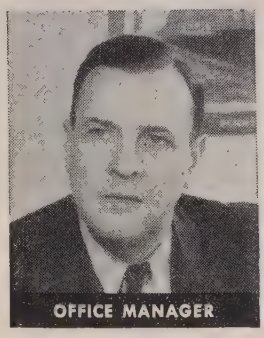
TELEPHONE SALESMAN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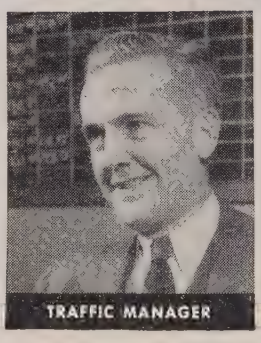
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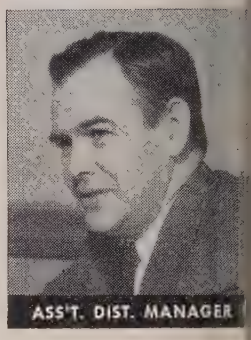
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NEW PRODUCTS and equipment

Reply card on page 119 will bring you more information on any new products and equipment in this issue

Multi-Range Test Chambers

. . . temperatures to −130° F

Line of all-purpose, multi-range test chambers is capable of producing low temperatures to minus 30° F, high to 200° F. Standard humidity cycle is 20 to 95 per cent from plus 35 to plus 185° F. Tests are made in five sizes with test space capacity from 4 to 36 cu ft. High capacity, low velocity forced air circulation system holds

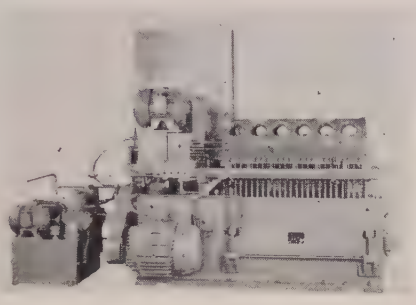
temperature variation in all parts of the test space to absolute minimum. Circulation is provided by a fan with motor mounted outside the cold test space. Control circuits are interlocked with fan and defrost cycles to assure smooth operation. Automatic drain valves are furnished as standard when a humidity cycle is incorporated with a low temperature cycle. Murphy & Miller Inc., Dept. ST, 1326 S. Michigan Ave., Chicago, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Back-Spotfacing Machine

. . . 56-spindle crankcase unit

This 56-spindle machine back-spotfaces two parallel lines of 25 holes each in the pan rail face and 6 holes in the accessory end of an aluminum crankcase for internal combustion engines. Crankcase is set onto hardened and ground rest plates on the table, where it is positioned correctly by locating pins and clamped in place. Table is



lowered by hydraulic power so the 50 cutter drivers extend upward through previously drilled holes in the pan rail. At the same time, the cutter drivers for accessory end are moved into working position so they extend through the holes that are to be back-spotfaced.

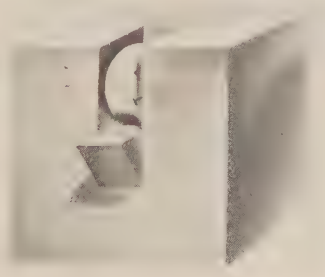
Feed cycle includes adjustable timed dwell against positive stops so all spotfacing cuts will be of correct depth. Moline Tool Co., Dept. ST, Moline, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Induction Die Heaters

. . . preheat in 4 to 10 minutes

Line of 60-cycle induction die heaters can preheat small or me-



dium size dies in 4 to 10 minutes. The smallest unit is rated at 15 kw. This heater will handle dies for most standard presses through 1500 tons. It is arranged for operation on 220 or 440-v, 60-cycle. Electrical wires are the only connections necessary.

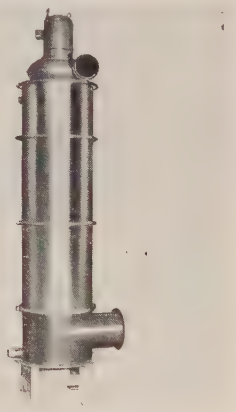
Operation is automatic. An operator depresses a button and the heater goes to work instantly, heating the die to predetermined temperature. Magnethermic Corp., Dept. ST, Youngstown, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Fume Washing Tower

. . . 750 and 1650 cfm capacities

This compact fume washing tower is developed for general laboratory and industrial use. The tower



is made in two standard sizes: 20-inch tower diameter, 8 feet 5 inches high; and 30-inch tower diameter, 9 feet 7 inches high. The former has rated capacity of 750 cfm of air; the latter, 1650 cfm.

Long life and low maintenance expectancy should result from a 1/16-inch coating of Tygoflex plastic that protects all metal surfaces, inside and out. The unit can be easily and quickly dismantled, moved to a new location and reassembled. Primarily designed to

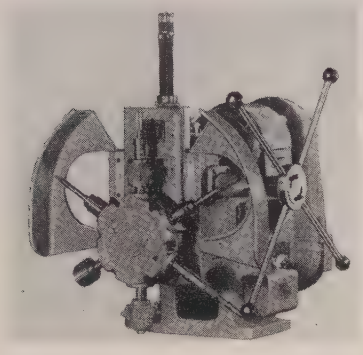
wash noxious or corrosive fumes from the air in plants and laboratories, the unit serves equally well as a washer to remove irritating dusts. Process Equipment Division, U. S. Stoneware Co., Dept. ST, Akron, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Flange Mounting Machine

. . . any type of base

Model 2B flange mounting machine can be mounted on any type of base, in a variety of positions. It is designed so two or more machines can be mounted on the same base at various angles to permit



operations on different planes at the same time. It is equipped with a separate mounting electrical panel and chain counterweight unit.

Other specifications include an 8-inch spindle travel; 12 preselective spindle speeds; range from 225 to 3000 rpm. Burg Tool Mfg. Co., Dept. ST, 3743 Durango Ave., Los Angeles 34, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Coupling, Hose Stock Cabinet

. . . quick check on inventory

This cabinet can be used as a field service or shop stock bin to store heavy duty and reusable couplings. The M-100 cabinet has six bins for heavy duty hose—up to 300 feet—of varying diameters and 28 compartments for couplings and adapters—up to 250.

To make up a line, it is necessary only to cut the hose to desired length and attach couplings with ordinary bench tools. A separate dolly equipped with casters is available to make it easily movable if necessary. In addition to keeping stock readily accessible, the cabinet provides visible inventory that can be checked instantly.

Industrial Division, Weatherhead Co., Dept. ST, 300 E. 131st St., Cleveland 8, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Five-Drawer Plan File

. . . stacked in any number

A line of metal five-drawer plan files is constructed to allow stacking in whatever number desired. In addition to filing in drafting and engineering offices, the units are useful for filing industrial work

plans, industrial layouts, sketches and drawings. Dust cover made of plastic coated cut cloth is attached to tilting arms which will stay in place when raised. Thus, operator can use both hands when removing or inserting drawings or blueprints in the drawer. Engineering Mfg. Co., Dept. ST, Sheboygan, Wis.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

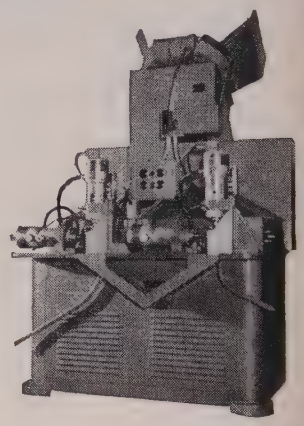
Drilling Deburring Machine

. . . has double feed, is automatic

This drilling and deburring machine has double feed and operates automatically. It is designed principally for second operations and screw machine parts up to 1-inch diameter and 2 inches long. It drills holes at any angles desired.

Machine operates automatically; the only attention required being to keep the hopper filled. Production capacity is 3000 pieces per hour.

The double-feed feature serves a dual purpose: Larger production and slower operating speed. Thus one-half the machine can be serviced while the other half is operating. Inter-Lakes Engineering Co., Dept. ST, 4845 Bellevue, Detroit 7, Mich.



FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Rosin Core Solder

. . . active, yet noncorrosive

Known as RTS 200, this rosin core solder is active yet noncorrosive. Oxide films and corrosion products on parts being soldered need not slow down operations because solder pierces such retarding agents. Chemicals used have no toxicity factor. Federated Metals Division, American Smelting & Refining Co., Dept. ST, New York, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Standard Indicator Points

. . . tipped with boron carbide

B4C standard indicator points are tipped with boron carbide in two thicknesses, 0.070 and 0.125-inch. Points are furnished with a highly polished, smooth surface. They are resistant to abrasive wear. Robert Marks Co., Dept. ST 47 Goddard St., Providence, R. I.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Production Line Lamp

. . . adjusts to any position

Flexibility of this lamp is designed to increase efficiency of the production line. Worker can ad-

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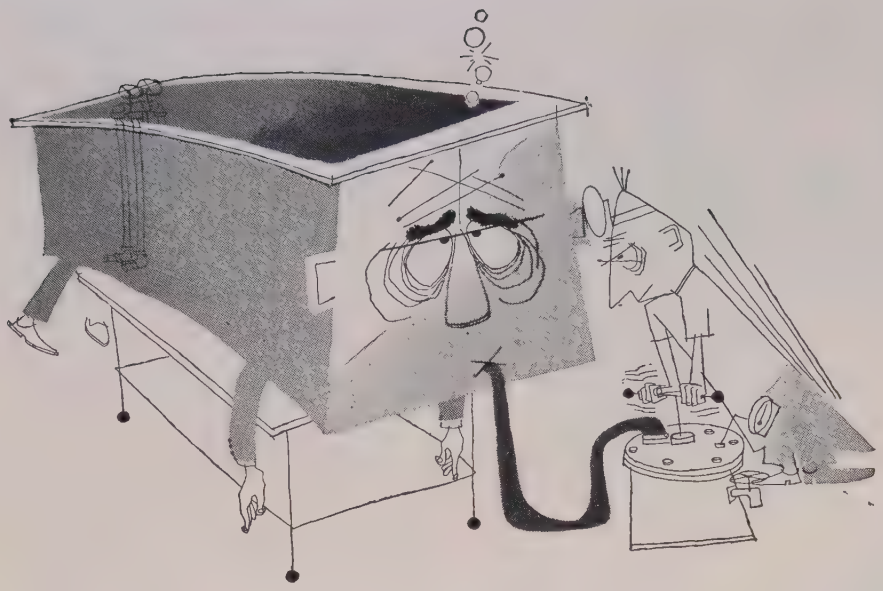

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It's a waste of costly time to pump out the solution every time your process heating and cooling tanks get indigestion due to pipe coil troubles. You can save this cost and eliminate production bottlenecks by replacing the pipe coils with Platecoils. Platecoils can be removed and replaced **without dumping the solution.** They simplify maintenance and save hours of downtime. They heat or cool 50% faster and take 50% less space in the tank. As revolutionary as the new wonder drugs, Platecoils cure production troubles involving heat transfer . . . and give profits a shot in the arm.

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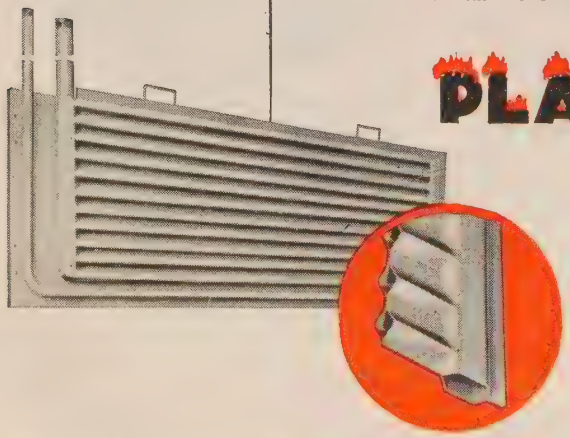
PLATECOILS SAVE 50% IN HEAT TRANSFER COSTS

PLATECOILS TRIPLE PRODUCTION

At Continental Motors Corp., 3 crankcase sections can be cleaned at one time when Platecoils are used while only one crank case can be cleaned with pipecoils in the tank. Ask about other case histories.



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just light to any location at de- sired intensity. Tension of springs holds the lamp exactly where it is placed, thus eliminating annoying shadows.

Arms and shade together pro- vide a 45-inch radius making pos- sible a concentrated light in any

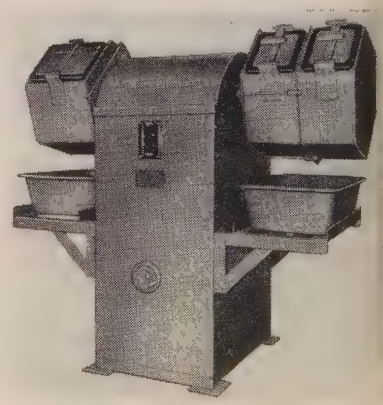
spot over a wide area. A variety of brackets is available, so the lamp can be attached to any sur- face—horizontal, vertical or slant- ed. Luxo Lamp Corp., Dept. ST,1 290 Madison Ave., New York 17, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Multiple Burring Barrel

. . . speeds small lot work

This multiple burring barrel is designed to assist finishers having



many small lots of parts to deburr. It permits two lots to be handled at

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Flange Selector

ooter Corp.—Giving immediate ection of such data as flange OD OD of raised face, thickness, and bolt info for series 15 and langes, this revised selector also a great deal of new facts, all in y-to-read slide rule form.

Lock & Weld Nuts

rip Nut Co.—Complete descrip- with applications and tabulated weight and price data is offered -page booklet on Gripco lock and nuts. These nuts are made to on standard commercial types bolts.

Voltage Stabilizers

General Electric Co.—12-page illus- ted bulletin GEA-5754 describes tomatic voltage stabilizers ranging m 15 to 5000-amp capacity. Causes d effects of voltage variations and erating and construction principles the equipment are described, to- ther with complete specs.

Torches, Mixers, Burners

Research Vacuum Supply Co.—De- iptions of new and improved three- ner torches, gas-air mixers, fish- l burners for slow-burning natural s, blow torches, compound vacuum mps and recording counters are ven in bulletin 12-K.

Grommet V-Belt

Allis-Chalmers Mfg. Co.—Claimed have long life and no splice, the exrope grommet V-belt is described d illustrated in 4-page bulletin B6497A. Cross section views show w it provides high gripping pres- re under all load conditions.

Combustion Safeguards

Minneapolis-Honeywell Regulator o. Brown Instruments Div — De- criptive data on combustion safe- uard systems for industrial ovens, rnaces and other heat treating ap- lications fired by multiple oil or gas burners is contained in bulletin 9603. It describes components, lists optional burner lighting methods and includes dimensional and operational info.

74. Bricks, Sticks & Stones

Simonds Abrasive Co.—Aluminum oxide and silicon carbide dressing stones for variety of purposes are decribed in illustrated 8-page catalog "Bricks, Sticks and Stones." Ordering information with specification is furnished for each item.

75. Lifting Magnets

Electric Controller & Mfg. Co.—If you want complete engineering data and specifications on lifting magnets, send for 24-page illustrated bulletin 900 on type SW all-welded magnets. Accessories and operating components are shown, along with photos of units in use.

76. Stock List & Calculator

Chicago Steel Service Co.—As an adjunct to the new stock list on stainless steels, price calculator quickly converts pricing code numbers on all stainless steel items listed into current prices in all quantity brackets.

77. Packings

Greene, Tweed & Co.—20-page illustrated catalog PC-102 covers Palmetto self-lubricating, molded, Teflon and sheet packings. Dimensional and other information is included, together with an application chart which permits rapid finding of the type best suited to any service condition.

78. Sintered Metal Parts

United States Graphite Co.—40 pages of information on Gramix sintered metal bearings, gears and other parts comprise illustrated catalog. Parts are produced in variety of ferrous and nonferrous grades from metal powders and compacted under pressures up to 70,000 psi. Catalog covers manufacturing, special design factors, chemical composition, physical properties and applications.

6-22-53

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Penton Building, Cleveland 13, Ohio

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79. Phosphate Coating

American Chemical Paint Co.—Phosphate coating chemicals and processes for paint bonding, rust proofing, protecting friction surfaces and improving product drawing and extrusion qualities are described in 12-page illustrated data sheet P-100-46. Steel, zinc, and aluminum are among the metals which can be treated advantageously.

80. Boiler System Accessories

McDonnell & Miller, Inc.—8-page illustrated catalog and price list contains complete specifications and ordering information on a line of products including boiler water feeders, low water cut-offs, pump controls, temperature and pressure relief valves and combination temperature and pressure valves.

81. Steam Cleaners

Clayton Mfg. Co.—Illustrated folder on the Clayton-Kerrick steam cleaner (model HR) outlines its operation and uses. Accompanying 4-page illustrated bulletin describes the Clayton-Hydro portable steam cleaning system which converts any live steam line into an effective cleaning system.

82. Heating Furnaces

Surface Combustion Corp.—Advantages of high thermal head heating, with gas or oil, for press forging, upsetting, extruding, stress relieving of ferrous and nonferrous metals are pointed up in 4-page illustrated bulletin SC-162. Basic furnace designs and burner arrangements are described.

83. Cost-Cutting Machines

Famco Machine Co.—Specifications and features for line of air, arbor, drill, foot and power presses, band saws and squaring shears are contained in 8-page illustrated catalog "Famco Cost-Cutting Machines."

84. Fire Extinguishing System

Randolph Laboratories, Inc.—Fire extinguishing systems of manual, mechanical and automatic-electric carbon dioxide type for protection of spray booths, baking ovens, quench and dip tanks, etc., are described and illustrated in 12-page catalog SYS-821. Detectors, alarms, shut-offs, etc., are covered.

85. Thread Rolling Heads

National Acme Co.—Fette self-opening thread rolling heads, both revolving and non-revolving types, are announced in 4-page bulletin FRH-53. Threads rolled in these hea… have high grade burnished surfa… Non-revolving type is used on tu… ret or hand lathes, while revolvi… types are used with yoke operati… mechanism on machines where threa… ing spindle is rotated.

86. Better Grinding

Landis Tool Co.— 84-page leathe… ette covered and spiral bound bo… "Better Grinding" has many valuab… tips on how to set up grinding jo… how to operate precision cylindri… grinders, how to take care of the… and how to turn out better grindi… jobs on Landis and other grinde… Seventeen chapters are devoted … basic grinding facts about cylindri… machines. Ninety illustrations.

EDITORIAL ARTICLES
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87. Resistance Welding

Versatility and ability to tie in wi… automatic parts handling equipme… is big plus feature of resistance we… ing. Other real advantages of pres… welding are summarized in STE… article "Resistance Welding Shines … Volume Producer" by Jack Ogden … General Motors.

88. Use More Cutters

Doubling up on the cutters g… rid of nonproductive machining ti… and keeps the chips flying. In STE… article "Cutters Team Up on Wo… piece" is described an automatic la… tool setup with nine cutters. C… drums for feed and form plates … contour keep automatic cycles … right track.

89. Scrap Bale Inspection

Bethlehem Steel has developed … fast method for checking the inter… quality of purchased scrap ba… Methods used up to now have be… lengthy and non-productive. N… system lets dynamite do the wo… It's described in STEEL article "Blast… Bales Give Up Secrets."

90. Pressure Welding

One of the newest joining te… niques for nonferrous metals is pr… sure welding. Work can be done c… or at elevated temperatures. B… techniques appear promising, parti… ularly for aluminum and its allo… C. Bruno and G. W. Birdsall … Reynolds Metals Co. discuss this jo… ing technique in STEEL article "Pr… sure Welding Attracts Interest."

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e same time in place of one. If ro multiple units are used on the anufacturer's twin finisher, a to- l of four individual lots can be ocessed simultaneously.

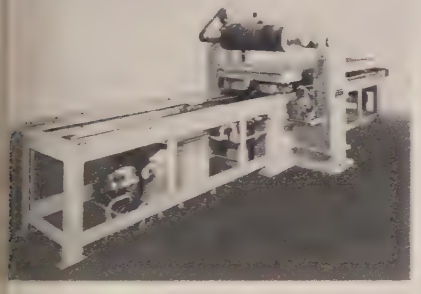
These multiple units are inter- hangeable with the single hex- gonal barrels standard on the ma- ine. In addition, the multiple it can be used on the single bar- l machine to double the number lots that can be tumbled on that evice. Multiple units are available ulined or lined with vinyl plastic. ampe Mfg. Co., Dept. ST, 3320 St. lair Ave., Cleveland 14, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

orizontal Polishing Machines

. . . polish entire sheet length

Series of horizontal polishing ma- hines is built for work on extru- ons, sheets and rods as well as naller and odd-shaped pieces.



tandard sizes range from 7 to 20- oot stroke. Machines permit pol- shing of extrusions and sheets the ntire length. They operate hy- raulically with provision for ob- aining dwell during the polishing ction and have adjustable stroke with stepless increments from 2 nches up to full capacity.

Series can be equipped with a echanical polishing compound ap- licator or spraying equipment as required. Machines take work in izes from 6 to 20 feet long. Cen-

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Just circle the corresponding number of any item in this section for more information.

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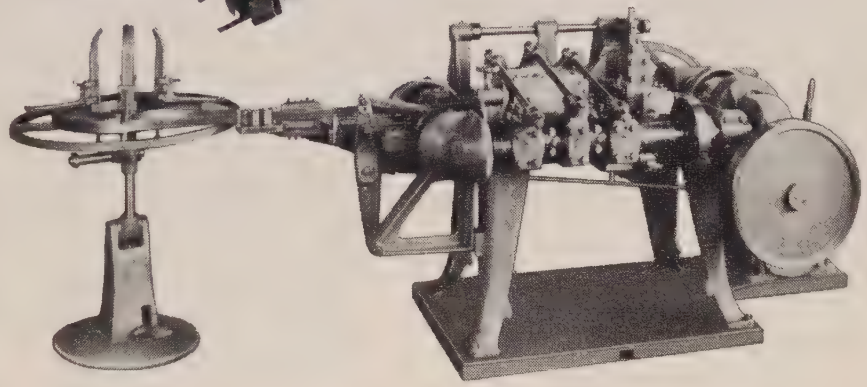
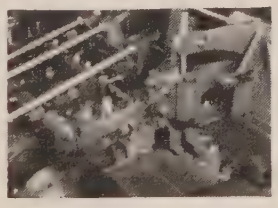
Wire and Ribbon Metal FORMING MACHINES

UNIFORMITY in automatic production doesn't come by chance! In the case of wire and ribbon stock forming on NILSON 4-SLIDES, *it means control of the material from the coil to the final form.*

Parts, such as illustrated, are produced to tolerances of .002 at critical dimensions. Dies and forming tools, once installed (faster and simpler with NILSON'S open construction) maintain close tolerances for short and long runs. One machine! One set-up! Increased production! Maximum uniformity!

Model SF3 NILSON 4-SLIDE, shown below, with No. 51B Tilting Stock Reel, is a complete unit that can be set-up in any convenient location.





Close-up of the NILSON forming section with the built-in Horizontal Press to the left. This design eliminates secondary handling and insures product uniformity because the sequence of stamping and forming is automatically controlled.

Close-up of the NILSON feed mechanism . . . capable of feeding wire and ribbon metal to tolerances of .001. Another important element in insuring product uniformity. Positive control is maintained over the material regardless the length of feed.

Range of sizes

Wire Forming
1/32" through ½" wire. Feeds up to 32".

Ribbon Stock Forming
1" through 3½" wide material. Capacity of press section 5 to 30 tons; 50 to 75 tons in heavy duty types.

For specific recommendations — send details of your operation.

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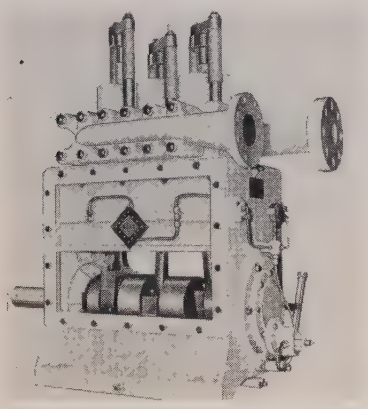
tral Machine Works, Dept. ST, Worcester, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

General Purpose Pump

. . . operates at 100 to 400 rpm

Pump for general-purpose industrial service delivers 12.5 to 50 gpm at maximum 400 rpm. Designed for continual service, the pump is of vertical, triplex con-



struction to provide maximum hydraulic horsepower in minimum floor space. Entire power end is enclosed, affording weather protection and operating safety. Pressure system lubricates crosshead guides, crosshead pin bearings and crank pin bearing. Ajax Iron Works, Dept. ST, Corry, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Smaller, Lighter Cleaner

. . . offers ready portability

This heavy-duty commercial cleaner is designed for users who require a smaller size, lighter

weight model. More readily portable than conventional large power cleaners, model JS performs in all dry suction cleaning and blowing operations. It is powered by a 1½ hp motor, driving a three-stage fan. National Super Service Co. Inc., Dept. ST, Toledo, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Floor Covering

. . . controls floor dusting

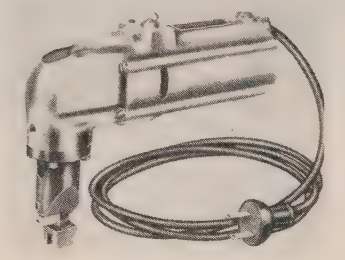
To aid in the control of dusting concrete floors, Transvar 266 has been developed. It is a thin liquid that may be applied by brush or mop. It binds tiny dust particles together so they are actually part of the concrete surface. Solution may be applied to both newly laid concrete and old surfaces. United Laboratories Inc., Dept. ST, 16801 Euclid Ave., Cleveland 12, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Punch and Die Cutting Tool

. . . no damage to contours

Wider application and adaptability are engineered into this improved model punch and die metal cutting tool. Redesigned nosepiece means greater rigidity, durability. In addition, the unit has a three-conductor cable and is available



with 220-v universal motor in addition to the regular 120-v motor.

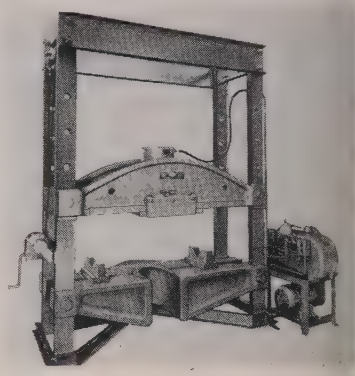
The tool cuts holes in tubes and ducts without damaging original contours, because cutting pressure is applied only to the metal being cut. Its metal cutting capacity includes stainless up to 14 gage. The unit can be used as a hand tool or vise-mounted for production work. Fenway Machine Co. Inc., Dept. ST, Philadelphia 3, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Triple-Duty Open Yoke Press

. . . three units combined

This open yoke press is designed to perform the work of three separate units. It incorporates all features of standard shop presses, can handle jobs done on regular forcing presses and can be used as a re[g]ular platen press. The line is bui[l]t in 100 to 400-ton capacities. Ma[c]hined V blocks are centered a[c]curately in the yoke memb[e]r



groove. A wear collar is supplie[d] for inserting in yoke recess; thi[s] plate insert covers recess and pr[o]vides a continuous flat working su[r]face. Clear open ends permit e[n]trance of long material. Rodge[r] Hydraulic Inc., Dept. ST, 74[5] Walker St., St. Louis Park, Minn[e]apolis 16, Minn.

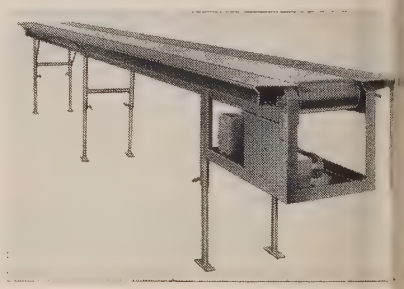
FOR MORE DATA—CIRCLE REPLY CARD NO. 1[8]

Apron Conveyor

. . . aids assembly, inspection [j]

This rigid apron is available f[r] all the manufacturer's belt and li[g]t roller conveyors, for use as bench[e] in assembly or inspection oper[a]tions. Variable speed drive is f[u]rnished to suit ranges of 4 to 1 a[n]d speeds from 5 fpm.

Belts to meet special handli[n]g



requirements are available on [f]power belt models. Metzgar C[o] Dept. ST, 409 Douglas St. N[W] Grand Rapids, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1[9]

Industrial Diamond Turner

. . . indexes automatically

This turner is a self-contain[ed] electro-mechanical device design[ed] to index addressing diamond au[to]matically by positive increme[nt]

. . . for most wire needs

A WIDE VARIETY OF WIRE APPLICATIONS

Continental Coiled Binding Wire . . . Braces for Automobile Fenders . . . Spokes for Steering Wheels . . . Wheel Spokes for Toys and Wagons . . . Yoke for TV Picture Tubes . . . (four times size of human hair) Heavy Wire for Hose Reels . . . Structural Framework for Trash Burners . . . Wire for Stapling and Paper Clips . . . Bolt-wire for Metal Fasteners . . . Florists' Wire . . .

Be sure you are getting the best wire for every job . . . wire that's tailored to fit your product needs. Wire of uniform quality that welds easily, securely, and forms under stress without fracturing the wire or its coating. To assure getting this fullest wire value, take advantage of Continental's continuing research and testing. Listed at left are just a few of the Continental wire types made to exacting analyses, tempers, finishes and shapes. Continental's wire service record is your guarantee that Continental goes all-out to produce the finest wire possible—for each application. Valuable case histories and the experience gained in more than a half-century of wire-making are brought to bear on your wire problem. Call or write Continental at Kokomo for the help you need with wire.

CONTINENTAL STEEL CORPORATION

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UCERS OF *Manufacturer's Wire* in many sizes, , tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

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We guarantee that Pittsburgh ARMORED GEARS, of our own laboratory specification steel and Armoring will give an average service life:

1. FIVE TIMES THAT OF UNTREATED GEARS.
2. ONE TO ONE AND ONE HALF TIMES THAT OF OIL TREATED GEARS, and
3. EQUAL OR SUPERIOR TO THE AVERAGE SERVICE LIFE OF ANY OTHER HEAT TREATED GEAR IN IDENTICAL SERVICE.

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Next time try a Pittsburgh **ARMORED GEAR.** You can identify it by its exclusive Pittsburgh purple protective coating. Let it prove its worth. Then standardize on these guaranteed gears for continued savings. Send your specifications to us today for quotation on one or any quantity of gears you need. We'll give you prompt service.

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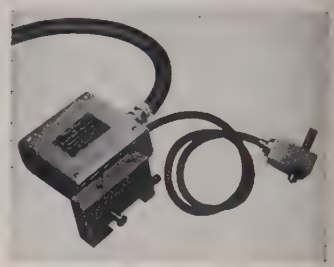
NEW PRODUCTS and equipment

Its action continually presents a new sharp diamond edge for each wheel dressing.

The unit is electrically operated. Since it has outside power source



it can be operated merely by mechanical contact, or manually, if preferred. This makes installation or removal extremely simple. Industrial Diamond Co., Dept. ST, 2392 Wolcott, Ferndale 20, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Clear Metal Protector

. . . protects against oxidation

Protection of aluminum, stainless steel and chromium from oxidation and discoloration is reported complete through one clear coating application. This coating can be applied by either spray or brush. According to its manufacturer, it has successfully undergone a 1204-hour salt spray test, a 3000-hour weatherometer test and a 100-hour humidity test.

Preparatory treatment of metal consists only of thorough soap and water cleaning. Once coating is applied, it prevents oxidation of metal surface. Coating will not discolor. Silvercote Products Inc., Dept. ST, 161 E. Erie St., Chicago 11, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

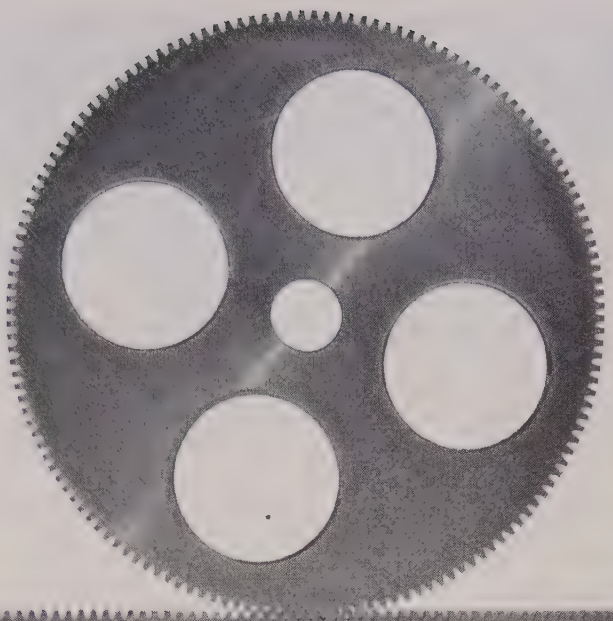
Protective Wrap

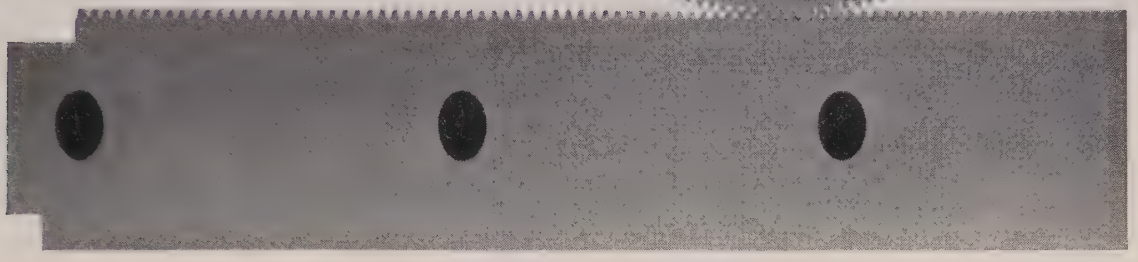
. . . for metal parts

Spot-Seal, a protective wrap for enclosing metal parts, sticks on to itself. It is wrapped over the parts, pressed together and the package is sealed. Wrapping makes a tight, dust-proof, water repellent, tamper-proof package and protects finely finished metal surfaces from scratches, abrasion and finger prints. Sherman Paper Products Corp., Dept. ST, 1640 Oak St., Newton Upper Falls 64, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Here's *Why* you can check precision gears *more conclusively* with Kodak Conju-Gage Gear Checkers

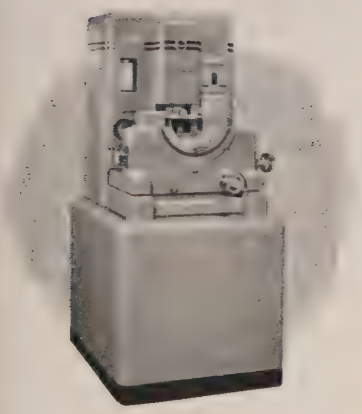




Why the composite check

Errors in gears seldom occur individually—they're usually combinations of as many as six types of errors. The practical way to test gears for these errors is to test them in action through the composite check recommended in the new American Standard (AGMA 236.02; ASA B6.11-1951).

This check measures gear errors as variations in center distance when the gear is rotated in contact with a master of known accuracy. Since this variation is the sum of errors in both gear and master, the degree of precision measurable depends on the precision of the master.



The Kodak Conju-Gage Gear Checker automatically records the composite effects of runout, base pitch error, tooth thickness variations, profile error, lead error, and lateral runout. Illustrated is the Kodak Conju-Gage Gear Checker, Model 4U, for gears up to 4⅛" pitch diameter. Larger and smaller models are also available.

Why the Conju-Gage Gear Checker

Kodak Conju-Gage Gear Checkers use a master of exceptional accuracy, the Kodak Conju-Gage Worm Section. These Worm Sections are generated by the continuous action of a thread grinder under control of a precision lead screw—circular pitch error and tooth thickness variations cannot be introduced by defects in an intermittent indexing mechanism. This means a more accurate gaging element, less chance that error in the master may coincide with a tolerable error in the gear to result in a needless rejection. Less chance, too, that an error in the master may subtract from an intolerable error in the gear, passing a gear that will fail in use.

By passing each right gear, rejecting each wrong gear, the Kodak Conju-Gage Gear Checker helps you reduce costs while maintaining highest precision. For the full story of this and other economies achieved by Conju-Gage instrumentation, send for the booklet, "Kodak Conju-Gage Gear Testing Principle." Write to:

Special Products Sales Division
EASTMAN KODAK COMPANY, Rochester 4, N.Y.

CONJU-GAGE INSTRUMENTATION

. . . a new way to check gear precision in action

To inspect all kinds of complex parts on a bright screen, Kodak also makes two highly versatile contour projectors.

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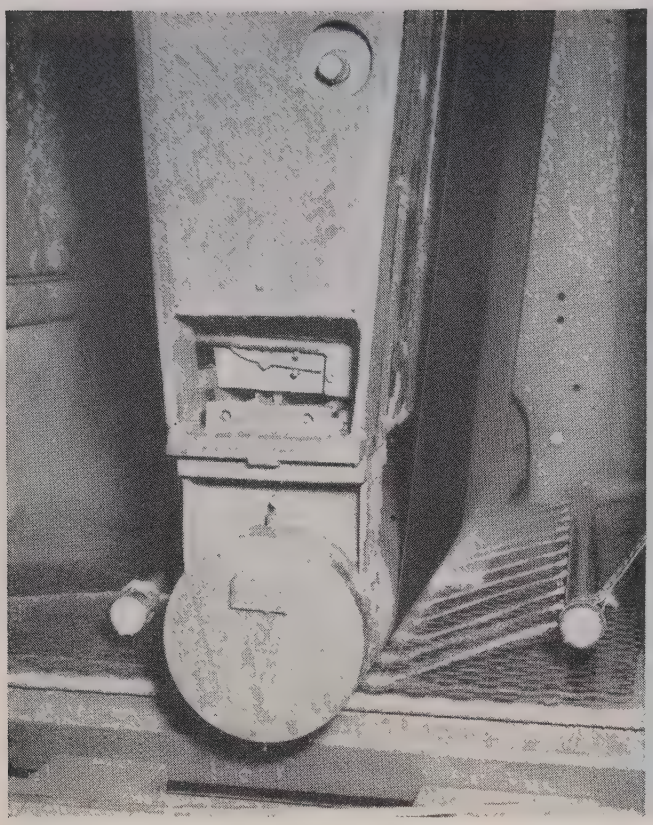


Contact rolls and reciprocating tables are used in surface grinding of tapered aluminum sheets for aircraft

SURFACE GRINDING:

Consider Coated Abrasives

By WARREN K. SEWARD
Abrasive Engineer
Coated Products Division
The Carborundum Co.
Niagara Falls, N. Y.

Belt grinding of metal surfaces takes hold as a method to investigate. Low cost, minimum part distortion and rapid machining cycles all stand in its corner for some jobs

YOU MAY be overlooking a chance to put abrasive belts to work on a surface grinding application. Lowered power requirements and a drop in workpiece distortion due to less generated heat are two of the factors in its favor.

An abrasive belt is coated with a relatively thin layer of abrasive mineral and bonding agent as compared to the radial depth of abrasive in grinding wheels. Length of the abrasive belt may offset this to a degree.

Less Push—Abrasive mineral on a belt is in the form of a thin layer or coating. It's oriented to provide maximum surface sharpness and to produce an abrasive article where each grain has a minimum of its surface covered by bonding agent and a maximum of its surface exposed to do useful work. With abrasive grains so oriented, less pressure is required to get penetration of the abrasive grain into the workpiece.

Lower pressures to obtain a given amount of penetration require less power, and a cleaner, sharper cut results. The clean, sharp cutting action also produces less heat, making the workpiece less susceptible to warpage or distortion by overheating.

Two Ways—In many cases, this is a decided advantage because a piece may be ground dry without the use of a lubricant or coolant and, consequently, the initial cost of the machine together with the operating costs may be considerably less.

Two primary methods serve to present the abrasive belt to the work. One method involves the use of a rigidly-mounted flat platen, and the other a contact wheel or rolls.

Must Be Flat—First of these is the simpler of the two and makes use of a rigid plate or platen to support the belt when in contact with the work. A prime consideration in this type application is that the platen itself must be absolutely flat. Otherwise, the surface generated will be a reproduction of the surface of the platen unless there is a relative motion between the work and the platen to counteract any such uneveness.

Hard-chrome plating the surface of the platen will prolong the life between grinds. With this method of surface grinding, it is desirable to oscillate the piece across the face of the platen to produce even wear on the belt and distribute wear on the platen as well as to spark out the piece and thus eliminate any repetitious scratch pattern which might otherwise be present. Where finish is important, this latter step is necessary for best results.

Platen Asset—Big advantage in the platen method of grinding is that the whole surface of the work is presented to the belt at one time in the form of a plunge cut. Using an automatic infeed mechanism, the piece is in continuous contact with the belt from the moment of contact until the finished size has been reached; thus eliminating any lost motion through reciprocation or rotation when the piece may not contact the belt.

Also, depth of cut can range from a few thousandths of an inch to several hundred thousandths

n inch with equal ease because o manual infeeding is required ter the automatic mechanism has een made operative. The latter se would naturally require a nger grinding cycle.

Size Limits — This type of inding lends itself well to rela- vely small parts but cannot be sed for grinding pieces larger an the width of the belt. Prob- m of effectively getting a cool- t between the work and the belt oviates the need for a machine to o large pieces by this method.

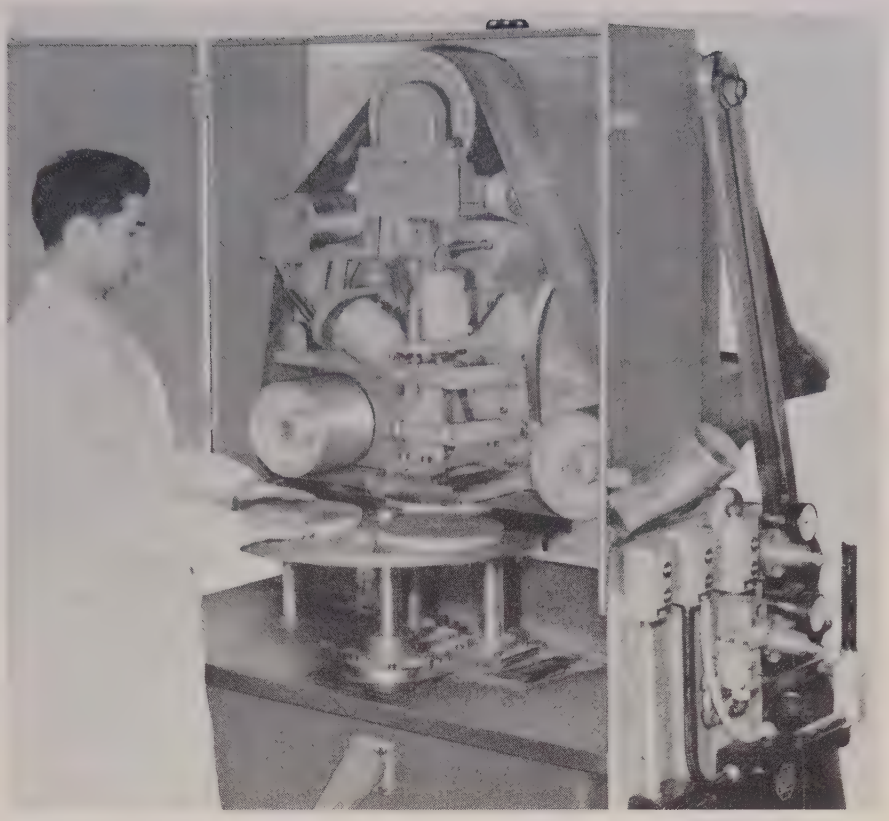
Also, when pieces with large reas are ground this way, the uestion of abrasive life becomes problem. As the area of the orkpiece increases, the pressure equired to fracture the individual brasive grains also increases, long with difficulties in getting oolants where they are wanted.

Stays Sharp—If sufficient unit ressure is not maintained through he normal course of grinding, the rains will merely become dull and lazed and no longer cut freely, hus shortening the useful life of he abrasive belt. However, when nit pressure is sufficiently high he grains will fracture or break ut of the bond completely to keep he abrasive sharp and free-cut- ing. This condition of dulling nd glazing may be overcome con- iderably by periodic use of an brasive belt dresser.

Another way of getting the same esults is to cut grooves or serra- ions in the platen face, thus re- lucing the effective area of contact f the platen with the work and hereby increasing unit pressure. t is essential that there be ap- ropriate relative motion between work and platen. Otherwise the pattern of the platen would be ransferred to the work and all ac- curacy and flatness would be lost.

Horizontal Belt — Machines of this type with infeed tables have been mounted with the belt in a vertical position traveling down- ward at the point of contact.

A new machine has the belt in a horizontal grinding position with a multiple-station work table un- derneath. This arrangement per- mits advantages of platen grind- ing through a plunge cut and rap- id stock removal rates, plus the opportunity to load and unload during the machining cycle.



New platen-type belt grinder manufactured by Curtis Machine Corp. has a multiple-station work table. Permits loading and unloading during grinding cycle

Doubling Up — Setup can be modified with a second abrasive belt unit to provide a roughing head at one point and a finishing head at another. This arrangement makes possible the complete finishing of parts in one handling. Other modifications are possible which would further improve the efficiency of the machine on individual types of work.

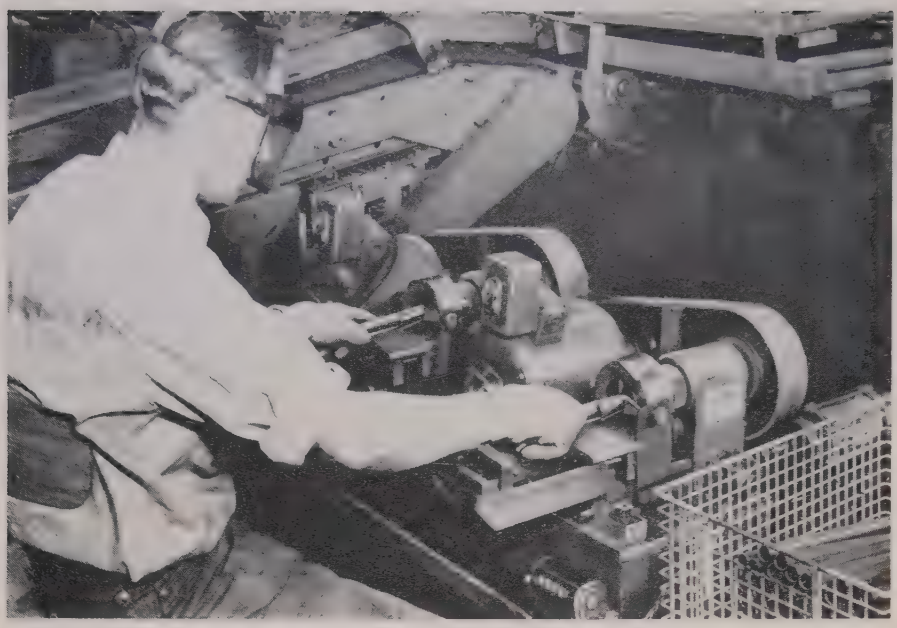
Reports received on this machine show the removal of up to 0.016-inch from one side of small hand tools in 5 seconds grinding time. On other jobs the grinding time has been reduced to 2 seconds. Accuracy obtained is of the order of 0.0005-inch on flatness and plus or minus 0.0005 to 0.001-inch on size for production work. Accuracy of the finished part, of course, is dependent upon the condition of the machine and accuracy of the initial setup.

Job Examples — Typical applications that readily lend themselves to grinding by the platen method include small steel forgings; hand tools such as screw drivers, end wrenches and pliers; small pump cover plates; gas and water metering valve halves; miscellaneous nonferrous parts; plastic parts; die castings and small steel components (up to 10 square inches surface) having an interrupted or noncontinuous surface.

Roll Support—Second type of surface grinding with coated abrasive belts utilizes a contact wheel or roll instead of a rigid platen. One such machine can be equipped with a reciprocating table or is available with an endless carrier belt. The abrasive belt is in a vertical position with the contact wheel or roll positioned at the bottom in a rigid mounting. Carrier belt carries the pieces to be ground under the contact roll and they emerge on the other end completely finished.

From a practical standpoint the carrier-belt method is used primarily for generating a particular finish while size and accuracy is usually a secondary consideration.

One Shot—Where accuracy and finish are both required, use of a metal carrier belt would be necessary to overcome resiliency of the composition belt. Even so, the technique is one primarily of finishing, because the belt makes only one pass over the workpiece.



Twin Machines Trim Welded Steel Tube

Double-end tube deburring and facing operations are all performed in a few seconds by one operator at Kold-Hold Mfg. Co., Lansing, Mich. Working with two Pines 600 air operated end-finishing machines, the one man machines ¾ x 0.028 x 13-17/64-inch welded steel tubing to precision limits at an average 600 pieces per hour. Machines are bench mounted and operated simultaneously by a single foot control that initiates automatic clamp, feed and return cycle. Machine at operator's left is tooled to handle an inside and outside deburring and facing operation at one end; unit at right then completes opposite end

Reducing the rate of through-feed will permit the removal of greater amounts of material.

The carrier-belt system can be further modified to advantage on certain parts where a one-pass set-up is desired and stock removal requirements are greater than can be accomplished by a contact wheel or roll. This modification calls for a relatively narrow platen —say from 2 to 4 inches wide— being substituted for the contact roll.

Longer Contact — This doesn't mean that a platen-type grind will cut more or faster than the contact roll principle. However, in this instance and particularly on small parts having 1 to 10 square inches of area to be ground on the carrier-belt setup, the narrow platen will usually remove more material and produce closer tolerances simply because the workpiece is in flat contact with the belt for a longer period of time.

Because the contact roll makes line contact with the workpiece, it must remove varying amounts of material from different points on the workpiece, due to unevenness, ribs, etc., in one pass, and at the same time produce a flat surface. This is practically impossible because the varying pressures produced by unevenness will cause deflection in the machine proper and this error will be intensified by the resilience of the carrier belt.

Cost Factor—By the same reasoning even a very narrow platen will have a larger area of contact and a longer time for grinding the high points or spots down to the level of the low ones. This results in a greater degree of flatness obtained, in conjunction with the possibility of a greater rate of metal removal.

Using the same type machine with a reciprocating table in place of the carrier belt, greater accuracies and faster stock removal rates are possible with contact wheels than with platen type grinders. Moreover, abrasive costs are lower because more efficient use is made of abrasive through proper selection of the contact wheel or roll used.

Key Role — The contact roll plays a vital part in the success of surface grinding with coated abrasives. The type roll used is dependent on the material being ground, depth of cut, rate of feed and finish required.

A wheel of given size will have theoretically at least, line contact with the work. This condition automatically gives a higher unit pressure between the abrasive and work for a given applied pressure than can be obtained with a platen. Higher unit pressures produce greater penetration of the abrasive grain into the work and consequently produce a larger chip.

Relatives—A direct correlation exists between rate of stock removal and surface finish produced for any given grit size when the applied pressure is varied and all other conditions remain constant. In other words, as the rate of cut is increased the surface finish also increases, in terms of microinches rms. This indicates a greater depth from peaks to valleys of an individual scratch formed by one abrasive particle.

Unit pressure can be further increased without additional applied pressure by grooving or serrating the contact roll. Hardness, angle of serration, face shape and number of serrations all have a direct bearing on the end result for any given application.

Points of Influence — Optimum production conditions leading to removal of a given amount of material from the workpiece or production of a desired finish, or both include proper combination of abrasive type, grain size, contact roll, and rate of feed.

Best contact roll is one which applies a unit pressure sufficiently high to fracture the abrasive grains when they become dull, or break them out of the bond completely. This continuously provides a sharp clean cut throughout the useful life of the belt, without appreciably altering the rate of cut.

Lower Load Rate—Another advantage in grinding with a contact roll rather than a platen, is the lesser tendency for the abraded material to pack or load the abrasive belt and thus reduce the rate of cut and/or produce a poorer finish. It also presents no problem in getting coolant to the grind to prevent overheating and possible warping or distortion.

Contact-roll grinding is adaptable to steel forgings, hand tools

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How aluminum from Canada averted a flare plant shutdown

When the aluminum shortage was at its worst, a certain American manufacturer was unable to procure enough of the ingot it needed to make flares and incendiary bombs for the Navy. With a shutdown of its flare plant imminent, the company's purchasing executives brought their problem to Aluminum Import Corporation — distributor of ingot produced by Aluminum Company of Canada, Ltd. ("Alcan").

Alcan moved fast. The flare plant ran out of metal on a Friday — but a carload (100,000 pounds) of Alcan aluminum arrived in time for operations to resume Monday morning.

Through us, this kind of emergency help from Alcan is available to aluminum users throughout the hemisphere. Moreover, aluminum in increasing quantities will be produced by Alcan in the future. In Quebec, Alcan is adding power and smelting facilities for producing 130,000,000 more pounds of aluminum per year . . . and in British Columbia is constructing facilities which in their initial stage will provide 200,000,000 more pounds per year.

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ardened steels, hand saw blades, ircular saw blades, microscope ases, and a large variety of non-errous parts and small, medium nd large steel parts, either solid r interrupted construction.

Another example of the contact oll principle with a reciprocating able is found in a production test onducted by Carborundum on hick aluminum sheets (see STEEL, ug. 25, 1952, p. 98). Sheets equired an accurate taper in eith-r a simple straight taper or a ompound taper to be used in wing ections for aircraft.

arbide Crucibles Go King-Size

Newly developed process has ade possible manufacture of a ne of giant carbon-bonded, sili-on carbide crucibles, said to be he world's largest, at Electro Re-ractories & Abrasives Corp., Buf-alo, N. Y.

Previously, the company could roduce crucibles holding only up o 400 pounds of aluminum. To-ay the process enables output of ing-sized pots holding as much as 100 pounds of lightweight alumi-um. Capacity, of course, is greater or heavier metals, such as brass nd copper alloys.

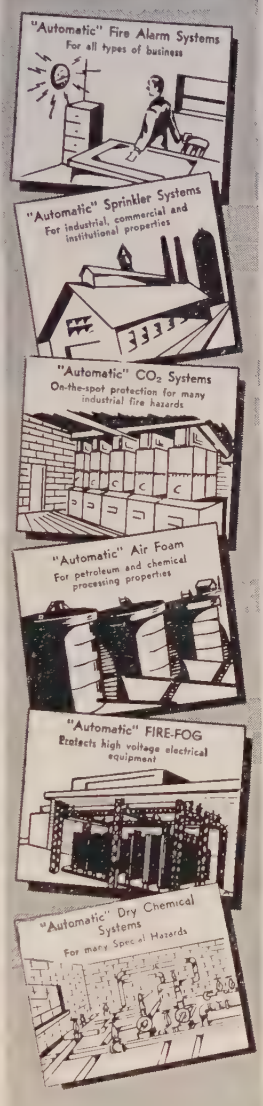
Mammoth crucibles were devel-ped to meet the increased sizes f furnace equipment in foundries. reatest demand for the large pots omes from die casting industry. he process imparts a laminated tructure that increases the trength and flexibility of the rucibles.

ontrol Maintenance Simplified

What to look for in maintaining ontrol equipment properly is told n a new eight-page manual en-itled "Proper Maintenance of Con-rol" released by Allis-Chalmers Mfg. Co., Milwaukee.

Besides giving helpful sugges-tions toward overcoming some of the most frequent difficulties com-mon to electrical control devices, the pamphlet has a handy control trouble-shooting chart for quick reference showing the symptom, possible cause and cure.

Copies are available on request from company offices 1021 S. 70th St., Milwaukee.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Without a thorough understanding of all conditions involved, we wouldn't hazard a guess. For fire protection, like any other scientific problem, requires (1) technical know-how, and (2) application of that knowledge. Most methods of fire safety are good . . . but only through "FIRE PROTECTION ENGINEERING"—designing, manufacturing and installing the specific type of system *best by test*—can you be sure of maximum safety.

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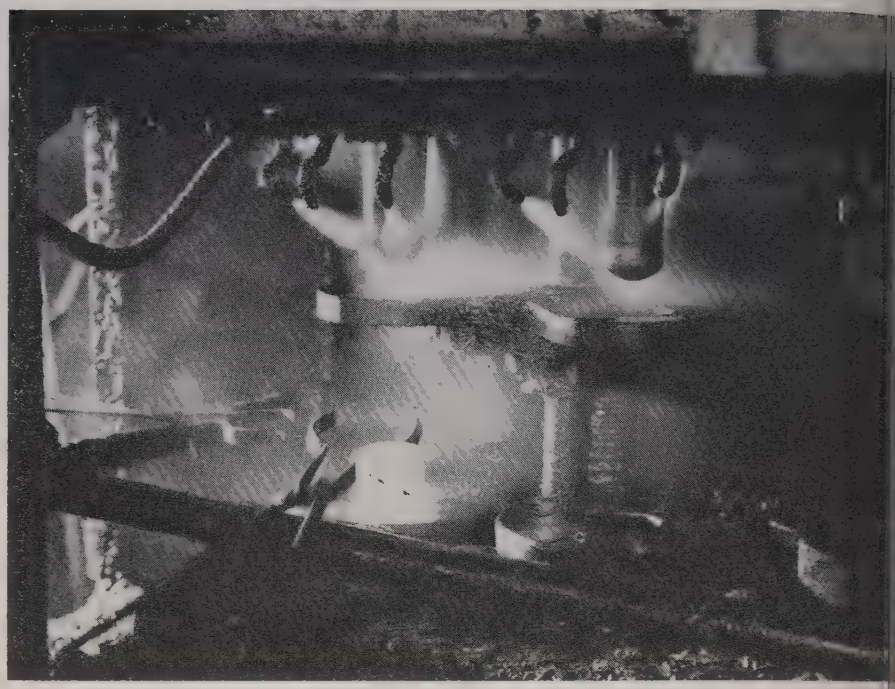

LONG LIFE FROM PUNCH AND FINISH DIE
. . . substantial quantities of 81 mm casings already shipped

West Coast Producer Steps Up Ordnance Schedule

TRENDS toward heavy industry in the West are shown by Rheem Mfg. Co.'s shipment of a pilot lot of 155 mm shells from its San Pablo, Calif., plant 45 days ahead of the original contract schedule.

First shipments went to the Army Ordnance Corps for testing. Production lots will follow soon. The San Francisco Ordnance Districts of the Army describes the projectile as a vital artillery item in Korean fighting.

Ordnance Production — With a lengthy record for mass production of ordnance items, Rheem's San Pablo plant has been producing substantial quantities of 81 mm mortar shells and cartridge cases for the Navy.

In forming 81 mm mortar casings, the company reports exceptional service life from a "Cr-Mo-W" punch and finish insert die used in hot cupping operations. While normal life of an extruding punch used in this operation is only 3000 to 5000 pieces, the firm says a similar unit in its plant made 30,860 pieces and had not broken when removed.

Long Life—With dies used in the finish insert operation, 15,000 pieces is considered a good run. Rheem's die turned out that number, then was polished and put back into operation. It then ran a total of 80,000 pieces before being removed.

Both dies were made from tool steel produced by Bethlehem Pacific Coast Steel Corp., San Francisco, furnished by the distributing firm of Earle M. Jorgensen Co., Oakland, Calif. They were designed by Rheem engineers.

Connecting Rods Drilled-Milled

Special machine tool capable of drilling and milling 600 automotive connecting rods per hour at 100 per cent efficiency is announced by Cross Co., Detroit.

The machine has five stations. One for loading, one for milling the lock slot and three for drilling the stepped oil hole. Parts are held on a fluid, motor-driven index table. Work holding fixtures are hydraulically operated.

Use of pre-set cutting tools reduces downtime and minimizes scrap loss. Other features include hardened and ground ways, hydraulic feed and rapid traverse. Hydraulic and electrical construction is to Joint Industry Conference standards.

lastic Cars "In" For Good

So says plastics engineer in an address to West Coast plastics and automotive men

EINFORCED plastics are in the utomotive industry, and in it to ay, a plastics engineer told a joint eeting of the West Coast sections f the Society of Plastic Industry, ociety of Plastic Engineers and ociety of Automotive Engineers in he Claremont Hotel, Berkeley, alif., recently.

"This glass-plastic material has roperties which make it a ma- erial that the automotive industry an't ignore," M. B. Crawford, Jr., estern plastic sales manager for he Naugatuck Chemical Division, .S. Rubber Co., stated in his talk.

Real Gains—He explained that in he past 17 months, since the first nnouncement of the commercial roduction of a low-cost, reinforced lastic car body, (STEEL, Feb. 16, . 79) two major auto manufactur- rs have announced large scale pro- uction of plastic cars and every ther automotive manufacturer is aking a close look at this new aterial. In addition, approximate- 20 small companies are manufac- uring semi-custom sports car bod- s from the material.

Listing the properties of rein- orced plastic, Mr. Crawford said it as strong, dent-proof, rust-proof, ght in weight, dimensionally sta- le under wet or dry conditions, asily fabricated in inexpensive olds without pressure and at oom temperatures, and adaptable o free-flowing designs.

Production Lagging—However, e stressed the need for improved roduction techniques for rein- orced plastics to adapt them to he mass-production methods of the utomotive industry.

He explained that methods cur- ently in use were satisfactory for he production of up to 15,000 units f a single body design. At that oint, he said, costs compare fav- rably with the cost of producing a similar number of units in metal. Beyond that figure metal construc- ion costs decline, he added, while lastic production costs remain at about the same level.

Auto body work is underway as a joint project of U.S. Rubber and Glasspar Co., Costa Mesa, Calif.

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Porous Castings Sealed

FULLY automatic process for sealing porous aircraft engine castings with liquid synthetic resin has been put into operation in Pratt & Whitney Aircraft branch plants at Southington and North Haven, Conn.

Believed to be the first of its kind in any industry, the operation makes aluminum and magnesium castings oil-tight through vacuum-pressure impregnation of 3255 Permafil resin produced by the General Electric Co.'s chemical division at Pittsfield, Mass.

After being cleaned, jet and piston engine castings up to 80 inches in diameter are placed in 1500-gallon autoclaves under a 28-inch vacuum to eliminate air pockets. Solventless 3255 Permafil is then introduced and light pressure applied for about 20 minutes. When pressure is released, castings are drained, easily washed and baked for four hours to cure the Permafil to a hard infusible solid which fills every pore of the metal.

Does the Job—Pratt & Whitney Aircraft describes the operation as "quick, simple and effective." Deep penetration of the pores enables subsequent machining with no effect on the seal. Castings withstand gas and liquid pressures at sustained engine temperatures of 150° C. Operating costs are lower than originally estimated and a larger two-autoclave unit capable of handling the biggest castings used by Pratt & Whitney is under construction at its main plant at East Hartford, Conn.

Method replaces a former multi-step process by which all openings in castings were stopped with rubber plugs and gaskets before sodium silicate sealing material was forced into the pores with hand pumps and subsequently hardened by steam baking. Exhaustive tests on every casting frequently revealed tiny air pockets which required repeating the expensive process one or more times.

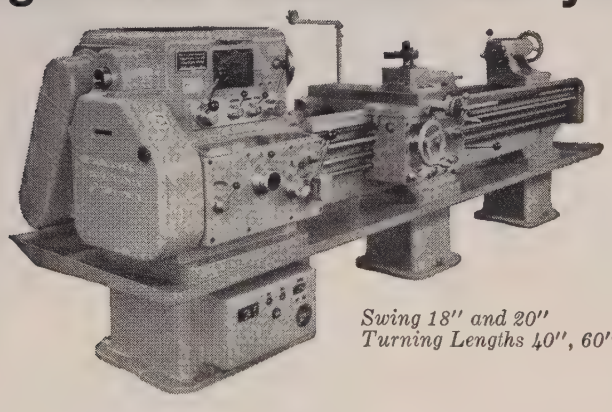
Resins vs. Brazing-Soldering

First comparison seminar ever held on organic bonding is scheduled for early fall by the Eutectic Welding Alloys Corp. at its training institute in Flushing, N. Y. Four-day meeting is open to all who wish to investigate the adhesive bonding of materials, and should prove valuable to design engineers, production men, and all who have problems in bonding.

"Industry has long felt the need," stated Rene D. Wasserman, president of the corporation, "for some reliable data on adhesives in which a comparison is made with conventional joining materials."

This is probably the first time in industrial history such a meeting of opposites has been convened. Each spokesman will make recommendations according to his wide knowledge and experience. These may be diametrically opposed to the opinions of the next speaker. The "jury" will form its own conclusions, guided by individual experiences and the need of the company represented. The methods recommended by speakers will be used to produce joints as specified. When both bonding methods have been used, the test pieces will be examined and then tested to determine the qualities and properties of the joints.

New high-speed, heavy duty GOEPPINGEN engine lathe costs less than you'd expect



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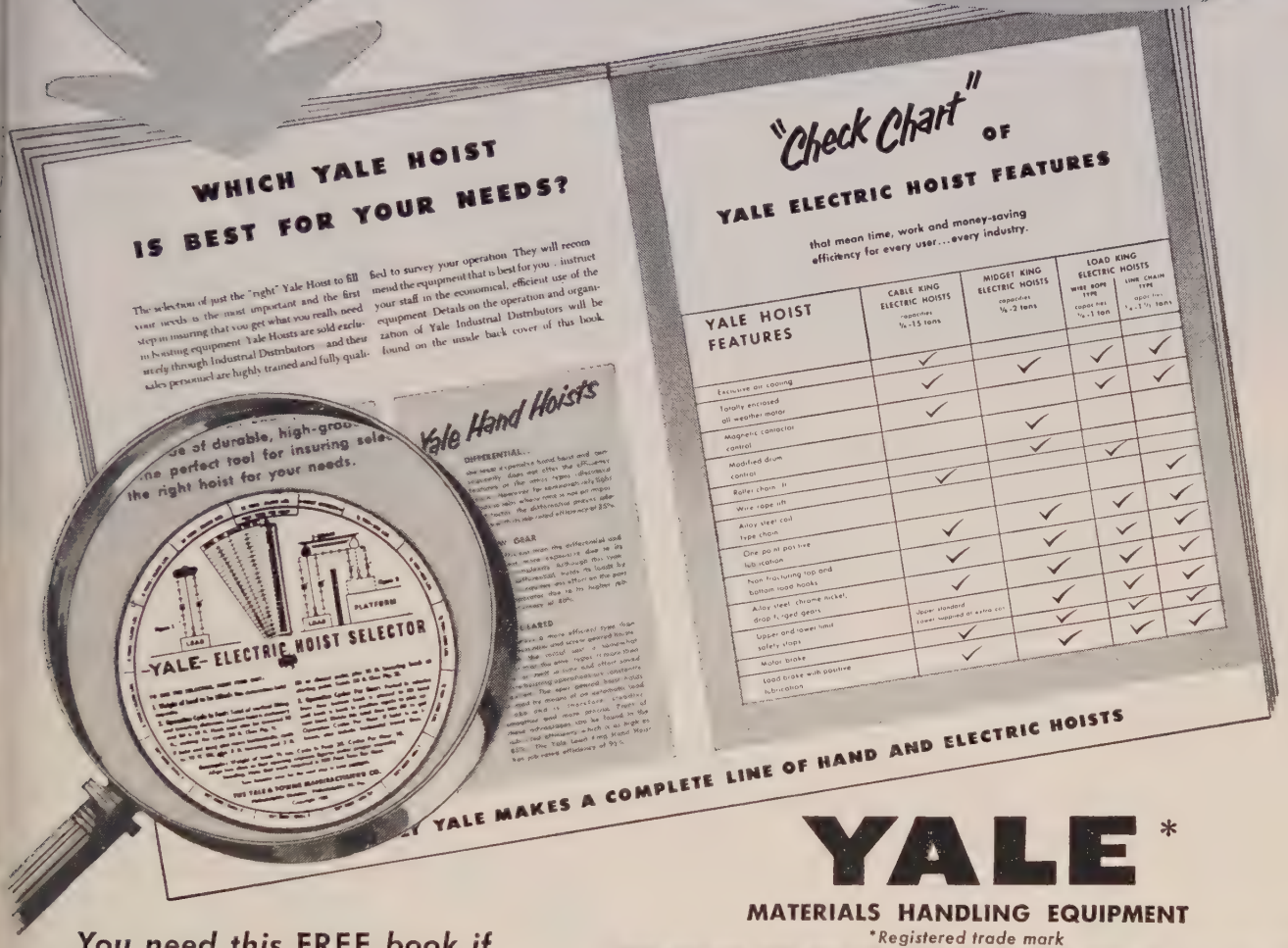
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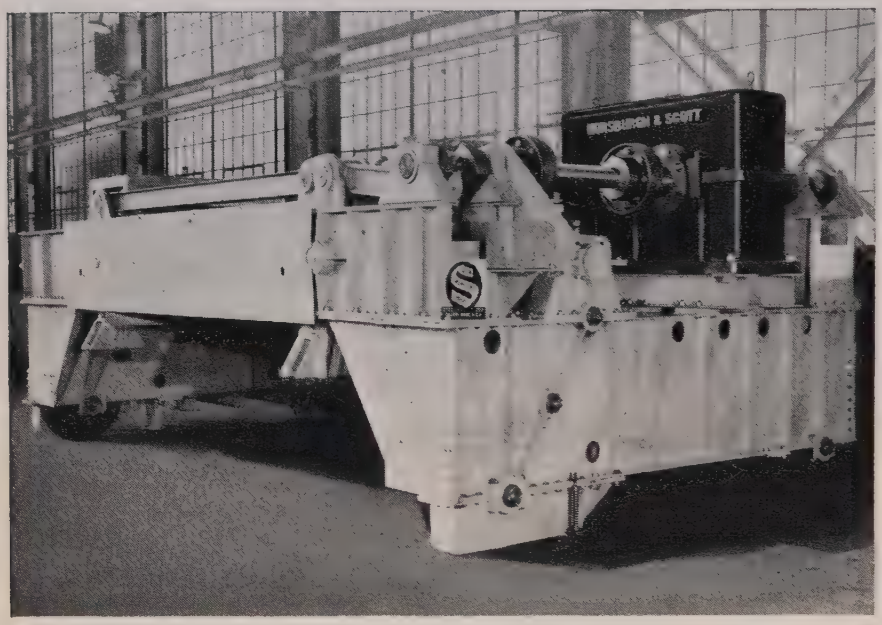

soaking pit cover through . . .

H & S REDUCERS

● The above photograph shows a soaking pit cover crane designed and built by Salem Engineering Company. Two Horsburgh & Scott Helical Speed Reducers are used on each crane...the lift drive handles a cover weighing about 28 tons and operates at a speed of 6′ per minute... the traverse drive moves the crane at a speed of 88′ per minute. Many of these cranes have been operating very satisfactorily for twelve to fifteen years... actual tribute to complete engineering design.

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Glass-Lined Stack

ALREADY known for fusing glass to steel, A. O. Smith Corp. reported a new steel-ceramics union recently when it created and erected a glass-lined smoke stack.

Photo shows the 3-ton section 44 feet in length and 6 feet in diameter, hoisted aloft by a 120-foot boom crane to form the top section of an 85-foot power house stack. Installation is at the steel fabricating firm's Milwaukee plant.

Combats Corrosion — The firm coated the stack section inside and

TOP SECTION GOES ALOFT
. . . new life for smoke-eaters

out with two glass linings, each approximating 0.005-inch in thickness. Bonding of these linings took place at 1600° F.

Special acid-resisting glass will combat normal corrosion of metal caused by acid condensate in the smoke. It is this corrosive factor which shortens the life of industrial stacks, now made overwhelmingly of steel rather than masonry. It has been estimated that about 5000 such steel stacks are replaced annually in the U. S.

Guinea Pig—Sections of glass-coated steel hung in active smoke stacks for periods ranging up to a year of testing have shown no corrosive deterioration.

Nevertheless this first glass-lined stack will constitute a guinea pig to be kept under observation for the next several years. If all tests prove satisfactory, A. O. Smith expects to find in the process of glass-lining stacks a new commercial adaptation of its techniques.

JESSOP Announces the First Complete Line of Tempered-and-Ground Flat Steels in America!

In keeping with Jessop's drive for unqualified leadership in the production of specialty steels, is this new manufacturing development at the Washington mill. Through a continuous process, carefully-controlled, ground-and-polished carbon, alloy, and stainless flat steels in widths up to 24 inches and in all applicable cut lengths, are available in large quantities. For example, the automatic furnace equipment alone is capable of processing a normal 7,000,000 pounds per year. Such steels in quantity were formerly obtainable only in Europe, on an average delivery schedule of at least 18 months. Now, you can get them from Jessop in a few weeks. This new availability should be of high interest to the makers of band saws, paper mill machinery, food packing equipment, textile machinery, and all others that require tempered steel with fine surface finish, flatness, straightness, accuracy of gauge, and exact composition. When inquiring, mention TRU-GROUND, which is the trade name of this new steel . . . this prime example of Jessop enterprise.

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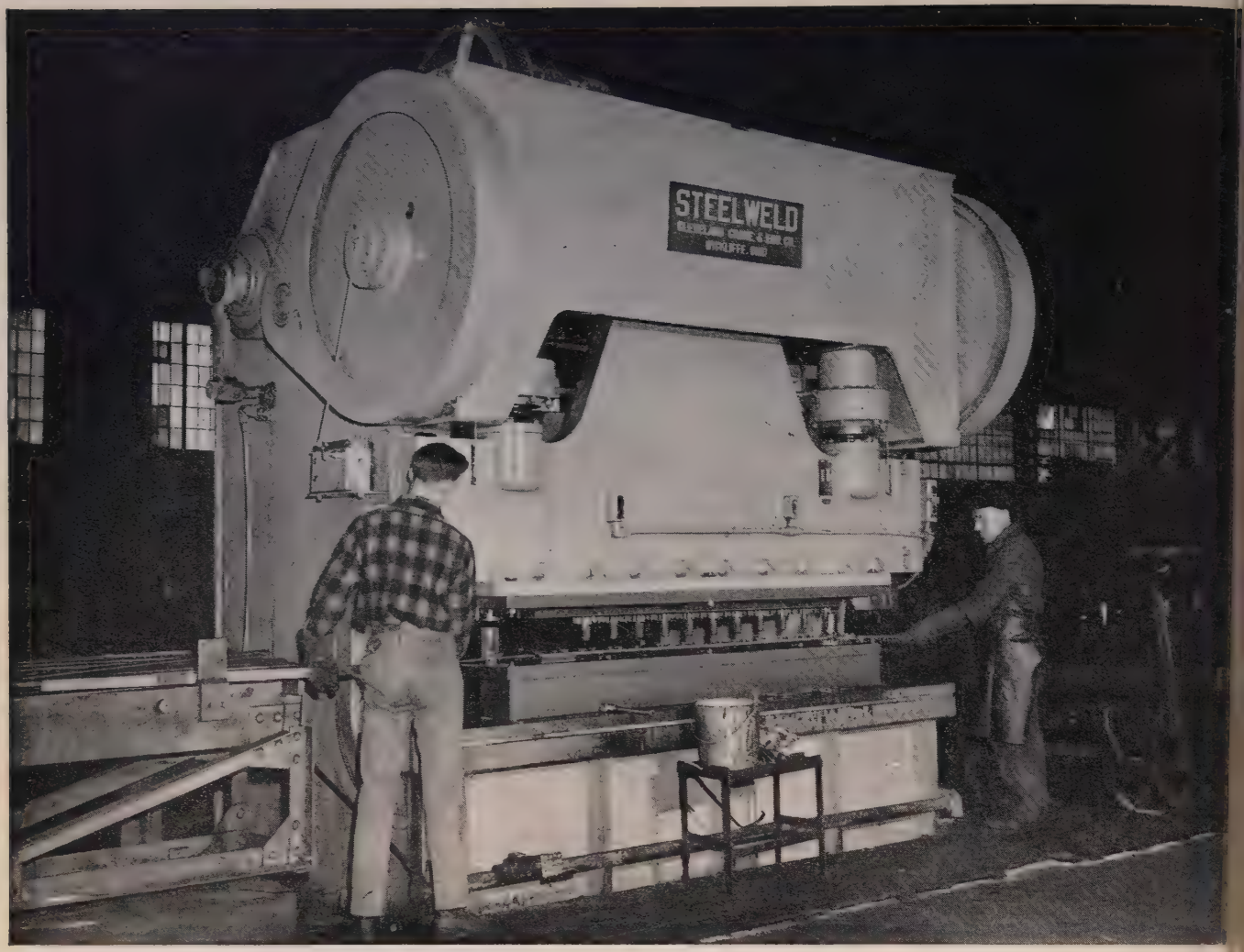

Model K5-8 Press, one of two Steelwelds in continuous 24-hour service since 1945, punching a series of holes in bridge floor bars.

2,000 Bars slotted every 8-Hour shift

Although originally conceived as machines for bending metal, Steelweld Presses are now serving a wide variety of uses. Two large Steelwelds at the MacDonald, Ohio Plant of the Carnegie-Illinois Steel Corporation are used solely for punching slots in steel bars, beams and T-sections for bridge flooring.

The time of one press is devoted largely to punching slots in bars 1⅝" and 1-7/16" wide by ¼" thick by 6'-2" long. Each bar contains 13 slots ½" wide by ⅝" to ⅞" long, and 24 slots ¼" wide by ⅝" to ⅞" long, a total of 37 slots all punched at one time. Two thousand bars are slotted in an eight hour shift.

Another standard job is that of punching 2-inch long slots on 4-inch centers in I-beams for bridge sections. These are punched 24 at a time. The beams vary in length from 24'-0" to 45'-0". Two hundred 40'-0" beams are punched in an 8-hour period.

Both Steelweld Presses have been in this service 24 hours a day since 1945.

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The Market Outlook

THE REST of this year will be a test period for the new and higher steel prices.

Will the market stand them? The increases come as steel supply and demand are headed toward a balance, which some analysts believe will be attained in the last quarter of this year. Will the higher steel prices hasten the reaching of a complete balance between steel supply and demand by choking off demand?

THE COST—In effect, there have been two price increases this year. They total approximately 8%, or $9 a ton. One of the increases occurred a few weeks ago when producers adjusted their price extras to reflect changes that took place in production costs while prices were frozen under government controls. While some of the extras were reduced, the over-all effect of the adjustments was an upward movement which increased by 4.5 per cent the average price a user pays for steel from the mill.

SECOND INCREASE—The second increase started last week by way of changes in base prices to compensate for the 8.5-cents-an-hour wage raise granted a few days earlier to the steelworkers. First to make the move on both wages and prices was U. S. Steel Corp. Average of the advance in its base prices was two-tenths of a cent per pound, or $4 a ton, for carbon steel, making the new average price for carbon steel about 6 cents a pound. This is an increase of approximately 3.5 per cent.

INEVITABLE— Neither of the two increases was unexpected, and there has been little or no opposition to them. In both 1951 and 1952, the steel industry's net earnings per dollar of sales declined, and in the latter year amounted to 4.91 cents, which steel companies said is too low to maintain a strong steel industry. As a result there was little doubt that steel price extras needed revamping in view of the inflation that continued in the nation's economy while steel prices were frozen. And it was no surprise that the cost of the wage increase was passed on to the steel consumer in the form of an increase in base prices. In both instances the steel industry had prepared the public for the increases by stating what was coming.

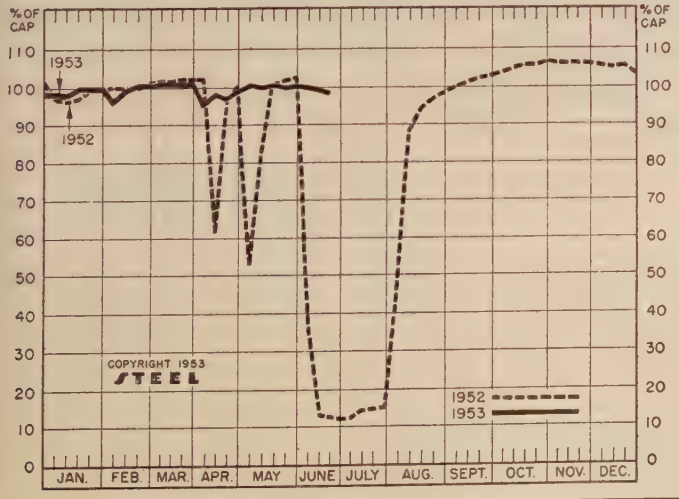
THE TEST—Regardless of the justification for the increases they will have to stand the survival test of the market place.

Many steel consumers are just now feeling the impact of the increases in extras. They've received invoices for steel delivered in May, first full month in which the new extras prevailed. Now that they're comprehending the extent of the increases they're questioning their ability to pass on additional costs where finished products are currently competitive or are approaching that point.

With the steelworkers' wage settlement erasing the possibility of a general strike in the steel industry it remains to be seen whether any great amount of the heavy demand for steel stemmed from efforts to build a protective inventory of material.

PRODUCTION PROBLEMS—If steel demand doesn't decline, the steel industry will find it increasingly difficult this summer to meet demand. Handicaps to production will be summer vacations and furnace repairs. While repairs are already shrinking the steel production rate it is possible they will become even more numerous in view of the length of time mills have pushed facilities to the limit. The week ended June 20 was the third consecutive one of decline in operating rates. A 1.5-point reduction that week lowered production of steel for ingots to 98 per cent of capacity.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended June 20	Change	Same Week 1952	Same Week 1951
Pittsburgh	99.5	+ 2*	2	101
Chicago	104.5	— 0.5*	7.5	104.5
Mid-Atlantic	98	0	19	102
Youngstown	90	—15	0	105
Wheeling	99.5	— 0.5	51.5	98.5
Cleveland	99.5	+ 1	0	102
Buffalo	106.5	0	0	104
Birmingham	101	0	0.5	100
New England	85	—10	25	85
Cincinnati	95	0	58.5	100
St. Louis	99	+ 3*	38.5	92
Detroit	106	— 4	32	99
Western	108	— 3	33	102
Estimated National Rate	98	— 1.5	13	103

*Change from preceding week's revised rate.
Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

The Metalworking Outlook—p. 37 Production-Engineering News—p. 85

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics (1947-1949=100)	June 16 1953	June 9 1953	Month Ago	May Average
	136.6	136.6	135.8	133.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended June 16, 1953

Units are 100 lb except where otherwise noted. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$4.075	Sheets, C.R. carbon	$5.625
Track spikes	6.875	Sheets, galv.	6.765
Track bolts	10.175	Strip, C.R., carbon	5.100
Tie plates	4.925	Strip, C.R. stainless (lb)	0.333
Joint bars	5.075	Pipe, black, buttweld (100 ft)	7.500
Plates, carbon	4.288	Pipe, galv., buttweld (100 ft)	9.166
Structural shapes	4.400	Boiler tubes (100 ft)	36.168
Bars, tool steel (lb)	1.580	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	7.025	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.153	Wire, carbon, merchant	6.392
Bars, carbon	4.400	Wire, fence, galv.	7.017
Bars, reinforcing	4.250	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	6.275	Wire, barbed (80 rod spool)	6.160
Sheets, H.R., carbon	4.375	Woven wire fence (20 rod roll)	13.629

FINISHED PRICE INDEX, Weighted: Calculated by STEEL*

	June 18 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	187.38†	182.82	181.31	171.92	135.02
Index in cents per lb.	5.076†	4.953	4.912	4.657	3.658

ARITHMETICAL PRICE COMPOSITES: Calculated by STEEL*

Finished Steel NT	$111.93	$111.28	$110.98	$106.32	$80.27
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.54	40.96
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	40.49
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	41.54
Steelmaking Scrap, GT	39.83	39.50	39.00	43.00	40.67

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.
† Preliminary.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	June 18 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	3.95	3.95	3.70	2.875
Bars, H.R., Chicago	4.15	3.95	3.95	3.70	2.875
Bars, H.R., del. Philadelphia	5.302	4.502	4.502	4.252	3.65
Bars, C.F., Pittsburgh	5.20	4.925	4.925	4.55	3.50
Shapes, Std., Pittsburgh	4.10	3.85	3.85	3.65	2.775
Shapes, Std., Chicago	4.10	3.85	3.85	3.65	2.775
Shapes, del., Philadelphia	4.38	4.13	4.13	3.93	2.98
Plates, Pittsburgh	4.10	3.90	3.90	3.70	2.925
Plates, Chicago	4.10	3.90	3.90	3.70	2.925
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	4.10	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.925	3.775	3.775	3.60–75	2.775
Sheets, H.R., Chicago	3.925	3.775	3.775	3.60	2.775
Sheets, C.R., Pittsburgh	4.775	4.575	4.575	4.35	3.50
Sheets, C.R., Chicago	4.775	4.575	4.575	4.35	3.50
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.275	5.075	5.075	4.80	3.90
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.05
Strip, H.R., Chicago	3.925	3.725	3.725	3.50	2.775
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.775
Strip, C.R., Chicago	5.70	5.35	5.35	4.90	3.60
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	5.475-5.525	5.475-5.225	5.475-5.225	4.85-5.10	3.725
Nails, Wire, Pittsburgh	6.55	6.35	6.35	5.90-6.20	5.125
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.60
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$54.00
Wire rods, ⅜-⅝", Pitts.	4.425	4.425	4.425	4.10–30	3.175
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$43.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del, Phila.	59.25	59.25	59.25	56.75	42.17
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	42.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.25	42.67
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	39.38
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	45.09
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	58.00
Ferromanganese, Etna, Pa.	200.00†	200.00†	200.00†	188.00‡	151.00*

*F.o.b. cars, Pittsburgh; 78-82% Mn, per gross ton. †74-76% Mn, per net ton. ‡78-82% Mn, per gross ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$40.50	$39.50	$39.50	$44.00	$10.25
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	42.50	42.50
No. 1 Heavy Melt, Chicago	37.50	37.50	36.00	42.50	39.25
No. 1 Heavy Melt, Valley	42.50	41.50	41.50	44.00	40.25
No. 1 Heavy Melt, Cleve.	40.50	39.00	39.00	43.00	39.75
No. 1 Heavy Melt, Buffalo	40.75	40.75	41.75	43.00	44.00
Rails, Rerolling, Chicago	47.50	47.50	47.50	52.50	54.50
No. 1 Cast, Chicago	39.00	38.00	39.50	45.00	68.50

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$13.00
Beehive, Fdry, Connlsvl.	17.00	17.00	17.00	17.50	15.125
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	19.50

PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on pages 144-145.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity,Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward,Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda,N.Y. W12	54.50	55.00	55.50	....
No.Tonawanda,N.Y. T9	....	55.00	55.50	....
Boston, del	65.15	65.65	66.15	....
Rochester,N.Y., del.	57.52	58.02	58.52	....
Syracuse,N.Y., del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary,Ind. U5	54.50	....	55.00	....
IndianaHarbor,Ind. I-2	54.50	....	55.00	....
So.Chicago,Ill. W14	54.50	55.00	55.00	....
So.Chicago,Ill. Y1	54.50	55.00	55.00	....
So.Chicago,Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon,Mich., del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron,O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain,O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie,Pa. I-3	54.50	55.00	55.00	55.50
Everett,Mass. E1	....	59.50	60.00	....
Fontana,Calif. K1	60.50	61.00	....	....
GraniteCity,Ill. G4	56.40	56.90	57.40	....
St.Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton,Utah C11	54.50	55.00	....	....
Geneva,Utah C11	54.50	55.00	....	....
LoneStar,Texas. L6	50.50	*51.00	51.00	....
Minnequa,Colo. C10	56.50	57.50	57.50	....
Rockwood,Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	55.00	55.00	55.50
Pitts.,N.&S. sides, Ambridge Aliquippa, del	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer,Pa. U5	54.50	....	55.00	55.50
Clairton,Rankin,So.Duquesne, Pa.U5	54.50	....	....	....
McKeesport,Pa. N3	54.50	....	....	55.50
Monessen,Pa. P7	56.50	....	....	....
Sharpsville,Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland,Pa. A3	58.50	59.00	59.50	60.00
Toledo,O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy,N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard,O. Y1	54.50	55.00	55.00	...
Youngstown Y1	54.50	55.00	55.00	...
Youngstown U5	54.50	....	....	55.50
Mansfield,O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton
(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$65
Buffalo H1	66

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P

NiagaraFalls,N.Y. P15	$9
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	92
Keokuk,OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95
Wenatchee,Wash., OH & Fdry., freight allowed K2	92

CHARCOAL PIG IRON, Gross Ton
(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$68

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$5
Steelton,Pa. B2	6
Philadelphia, delivered	6
Troy,N.Y. R2	6

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NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 29.75-30.00c, Conn, Valley; Lake nom.; foreign electrolytic, del. 29.75-30.00c.

Brass Ingots: 85-5-5-5 (No. 115) 26.00c; 80-10-10 (No. 215) 34.75c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 21.25c.

Zinc: Prime western 11.00c; brass special 11.25c; intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c delivered.

Lead: Common 13.30c; chemical 13.40c; corroding 13.40c; St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 22.75-23.75; No. 12 foundry alloy (No. 2 grade) 22.00-23.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75-24.50; grade 2 23.00-23.75; grade 3, 22.00-22.50; grade 4, 21.00-21.50.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt RFC, 121.50c; outside market 92.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $189-193, per 76-lb flask.

Cadmium: "Regular" straight or flat forms, 2 deld.; special or patented shapes $2.15.

Beryllium-Copper: 3.75-4.25% Be, $40.00 per lb of contained beryllium, with balance as copper at market price on date of shipment, f.o.b. Reading, Pa. or Elmore, O.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open-market, New York 85.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $165-$175 per troy ounce.

Titanium: (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Apr. 1, 1953. Listings are lowest quotations.)

Sheet: Copper 50.48; yellow brass 42.87; commercial bronze, 95% 49.89; 90% 48.76; red brass, 85% 47.11; 80% 45.99; best quality, 44.43; nickel silver, 18%, 59.84; phosphor-bronze grade A, 5%, 70.50.

Rod: Copper, hot-rolled 46.83; cold-drawn 48.08; yellow brass free cutting, 36.68; commercial bronze 95% 49.58; 90% 48.45; red brass 85%, 46.80; 80%, 45.68.

Seamless Tubing: Copper 50.42; yellow brass 45.78; commercial bronze, 90%, 51.32; red brass, 85%, 49.92.

Wire: Yellow brass 43.16; commercial bronze, 95%, 50.13; 90%, 49.05; red brass, 85%, 47.40; 80%, 46.28; best quality brass, 44.72.

(Base prices effective Apr. 1, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 37.46; 30,000 lb lots, 37.58; l.c.l. 38.08. Weatherproof, 100,000 lb, 37.85; 30,000 lb, 38.10; l.c.l., 38.60. Magnet wire deld., 15,000 lb or more 43.93; l.c.l., 44.68.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.048	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.156-0.188	48.0	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $18.50 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $18.50 per cwt. Traps and bends: List prices plus 30%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in. 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill effective Mar. 9, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL

(Base prices f.o.b. mill effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled, oval, carbonized, carloads 81.00c; 5000 to 29,999 lb, 83.00c; 500 to 4999 lb, 85.00c; 1 to 499 lb, 89.00c, f.o.b. Cleveland.

Nickel Chloride: In 100 lb bags; 10,000 lb and over, 37.00c; 5000 to 9900 lb, 38.00c; 400 to 4900 lb, 40.00c; 300 lb, 42.00c; 200 lb, 43.00c; 100 lb, 45.00c, f.o.b. Cleveland.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers $1.10 per lb; 100 to 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac. Based on $1.215 tin.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

Stannous Chloride (Anhydrous): In 400 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more. Based on $1.215 tin.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 20,000 pounds, f.o.b. shipping point; on lots over 20,000 pounds at one time of any or all kinds of scrap, add 1 cent per pound.)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	28.625	28.625	27.875
Yellow Brass	21.375	21.125	19.625
Commercial Bronze			
95%	27.250	27.000	26.500
90%	26.125	25.875	25.375
Red Brass			
85%	25.125	24.875	24.375
80%	24.125	23.875	23.375
Best Quality(71-80%)	22.500	22.250	21.750
Muntz metal	20.000	19.750	19.250
Nickel silver, 10%	25.250	25.000	12.625
Phos. Bronze, A	30.625	30.375	29.375
Naval Brass	20.000	19.750	19.250
Manganese Bronze	20.000	19.750	19.250

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 24.00; No. 2 copper 22.50; light copper 21.00; refinery brass (60% copper) per dry copper content 20.00.

INGOT MAKERS' COPPER AND BRASS SCRAP BUYING PRICES

(Cents per pound, carlots, delivered)

No. 1 copper 24.00; No. 2 copper, 22.50; light copper 21.00; No. 1 composition borings 17.50-18.00; No. 1 composition solids, 18.00-18.50; radiators 14.00-14.50; heavy yellow brass solids, 14.00-14.50; yellow brass turnings 13.50.

SMELTERS' BUYING PRICES FOR SCRAP ALUMINUM

(Carlots, delivered)

2S aluminum clippings, 16.50-17.00c; mixed clippings, 15.50-16.00c; old aluminum sheet, 13.00-13.50c; old aluminum cast, 12.75-13.50c; borings and turnings, 13.50-14.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 23.00-23.50; No. 2 20.00-20.50; light copper 18.00-18.50; No. 1 composition red brass 17.00; No. 1 composition turnings 16.50; mixed brass turnings 10.00; new brass clippings 17.50; No. 1 brass rod turnings 16.00; light brass 10.00; heavy yellow brass 12.50; new brass rod ends 16.50; auto radiators, unsweated 13.00; cocks and faucets 15.00; brass pipe 16.00.

Aluminum: Clippings 2S 13.00; old sheets 9.00; crankcase 9.00; borings and turnings 6.50; pistons and struts 6.50.

Tin: No. 1 pewter 55.00; block tin pipe 80.00; No. 1 babbitt 45.00.

Lead: Heavy 10.50-11.00; battery plate 6.00-6.25; linotype and stereotype 12.75-13.25; electrotype 11.00-11.75; mixed babbitt 11.50-12.50.

Zinc: Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

Nickel: Sheets and clips $1.00; rolled anodes $1.00; turnings 85.00; rod ends $1.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
June 17-18	29.75-30.00	13.30	11.00	92.00	20.50	34.50	60.00	85.25
June 16	29.75-30.00	13.30	11.00	92.50	20.50	34.50	60.00	85.25
June 15	29.75-30.00	13.30	11.00	93.00	20.50	34.50	60.00	85.25
June 12-13	29.75-30.00	13.30	11.00	93.50	20.50	34.50	60.00	85.25
June 11	29.75-30.00	13.30	11.00	93.00	20.50	34.50	60.00	85.25
June 10	29.75-30.00	13.05	11.00	92.50	20.50	34.50	60.00	85.25
June 9	29.75-30.00	13.05	11.00	91.75	20.50	34.50	60.00	85.25
June 8	29.75-30.00	13.05	11.00	92.75	20.50	34.50	60.00	85.25
June 5-6	29.75-30.00	13.05	11.00	93.50	20.50	34.50	60.00	85.25
June 4	29.75-30.00	13.05	11.00	95.50	20.50	34.50	60.00	85.25
June 3	29.75-30.00	13.05	11.00	95.75	20.50	34.50	60.00	85.25
June 1-2	29.75-30.00	13.05	11.00	95.00	20.50	34.50	60.00	85.25
May Avg.	29.845	12.55	11.00	97.240	20.50	34.50	60.00	85.25
Apr. Avg.	30.755	12.473	11.00	102.567	20.50	34.50	60.00	85.25

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Nonferrous Metals

Prices of nonferrous metals are moving toward new balance with one another. While aluminum and perhaps lead and zinc will rise, copper and tin will drop

REORIENTATION of metal prices is again shaping up. It's one of the two strongest trends in the metals picture today. The other is steady, unspectacular acceleration toward market normalcy that should be complete everywhere by year end.

Steel price hikes will have some bearing on the pending shuffle in nonferrous prices. Other factors include wage negotiations facing the domestic industry, supply-demand considerations and the final shakeoff of control years' distortions.

Going Up—Aluminum is destined to head higher. Already scattered adjustments on a handful of products have been put into effect without fanfare. An across-the-board raise will be hard to avoid with any wage settlement. Industry's belief in the strong possibility of higher aluminum prices could be responsible for much of the pressure on aluminum mills today, and could be causing order duplication.

Also trending upward are lead and zinc, though neither indicate it with any confidence in daily markets. Chief reason for zinc to move up, says one industry man, is that it can't go much lower. Actually, the metal hasn't changed price since March, and metal men believe the crisis is past as European demand shows signs of revival and domestic consumption stays strong.

Lead has advanced twice in the last month, though in somewhat self-conscious quarter-cent increments, to 13.50 cents, New York basis. Some lead experts believe it will stay there a while. Others say a 14-cent level is not unlikely.

On the Downgrade—Not all metals are going up though. Copper, tin and their alloys will be lower before summer is through, say buyers. Chilean copper still brings 36.5 cents and that country understandably will hold out as long as it can get that price, even if some production isn't sold. Sooner or later Chile will have to concede, however. Danger is that the piled-up metal then released would depress the market and push prices down further.

Tin still fluctuates daily with international happenings and disposition of trades, is likely to continue thus for an indefinite period. Mercury has fallen off $3 in a week's time, in true warm-weather fashion.

Aluminum Stocks Improve

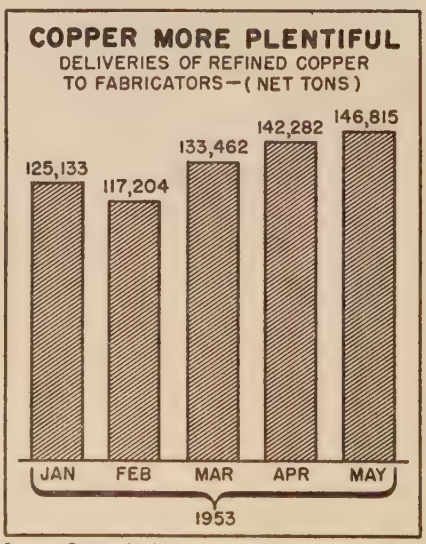
Warehouse stocks of aluminum products are at their best state in years, averaging around 75 per cent of normal in most cases. Better deliveries from mills, changes in M-11 and changes in M-88 and imports have been held responsible for the improvement. Stocks aren't complete in many lines though. Sheet is particularly tough, and a near-universal warehouse practice is to supplement domestic supplies by importations.

Importers report a slight quieting in inquiries with warm weather. Flat sheet and strip, chiefly 52S, 2S and 3S are in strongest demand. Deliveries take only 8 to 10 weeks for the tightest products.

Freedom for Beryllium-Copper

Stripping of controls from copper wrote finis to restrictions on beryllium-copper products too. Today there is little likelihood of shortages, though demand remains good in most products. Deliveries are somewhat extended on rolling mill products only.

Rod, bar and wire are available for prompt shipment, with redraw wire moving well. Seamless tubing still commands extended deliveries but supply has turned easier in recent weeks. Much of the seamless tubing produced goes into such aircraft parts as bourdon tubes, while a lot of the strip goes into diaphragms and pressure-sensitive elements.



Source: Copper Institute

Order balance of mills is still overweighed in favor of strip, though, indicating strong activity in instruments, controls, electronics, business machines, electrical equipment and automotive lines. Forging billets, used extensively for seam welder wheels, are moving well.

Casting ingot sales are steady but demand for master alloys, particularly beryllium-copper, are spotty. Stocks deliveries are possible in both. Beryllium-aluminum, regarded as a "comer" for use in grain refining, ignition temperature control and deoxidizing is in a more extended delivery position, as is beryllium-magnesium-aluminum, used chiefly to control ignition temperature.

Aluminum Allotments

Independent fabricators will get 45,000 tons of primary aluminum from Alcoa, Reynolds and Kaiser in the third quarter, in addition to DMS set-asides. That's about the same amount they're presently getting, but 900 tons more than minimum amounts required by GSA contracts. All of this metal has been contracted for by the independents in advance.

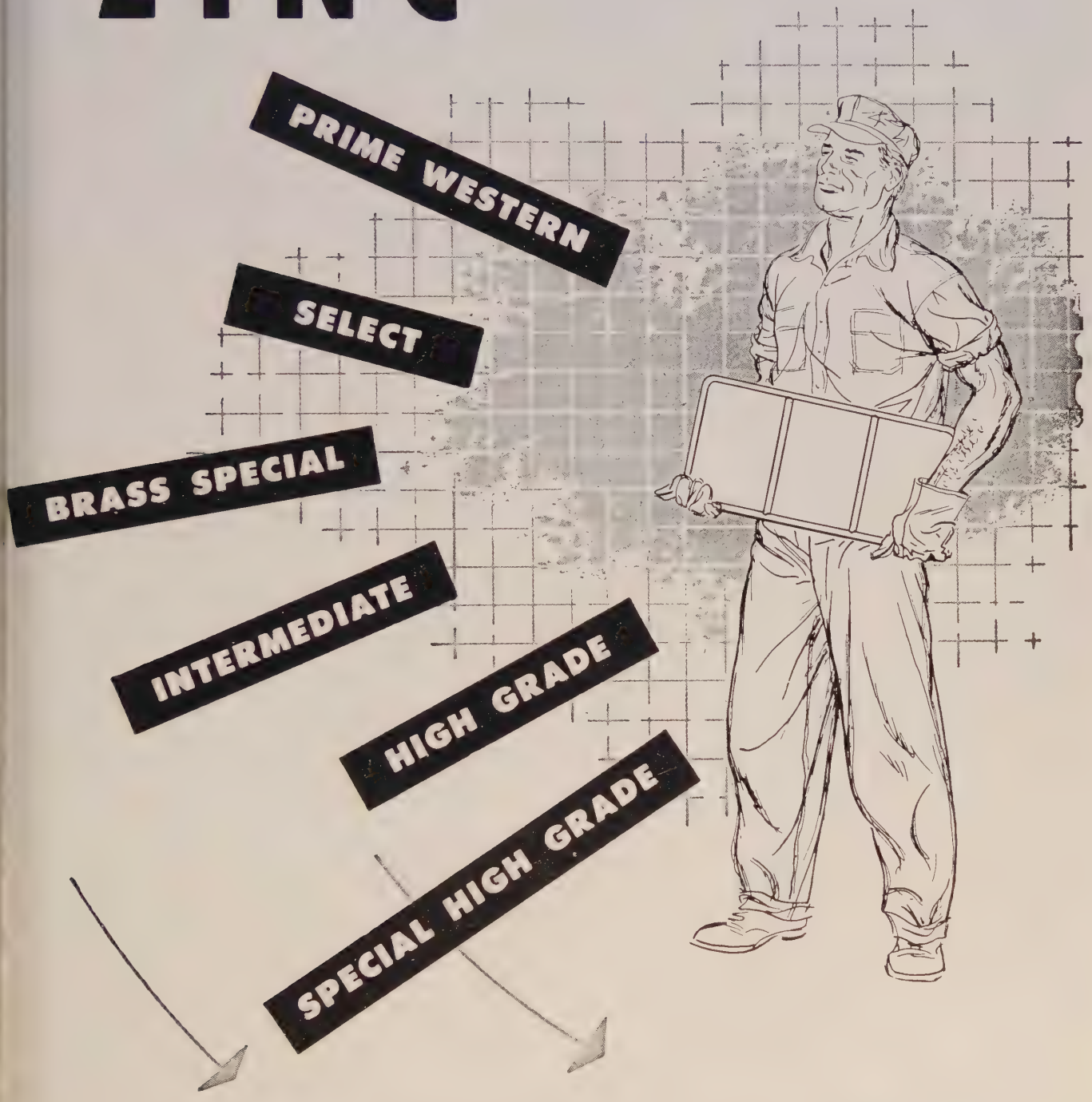
GSA estimates third-quarter aluminum output at 325,000 tons, of which about 110,000 tons will come from new facilities.

Nonferrous Briefs

- Warehouses say brass mill stocks are about 70 per cent of normal today, with brass rod being the hardest product to get delivery on.
- Battery smelting charge is against up to $40-$45, indicating a softening in secondary lead demand.
- Aluminum rod, cable, foil and roll-form shapes can still be ordered for August delivery.
- Secondary copper production in May fell to 9632 tons from April level of 15,185 tons. Deliveries of refined copper to consumers reached an eight-year high of 146,815 tons.
- Kaiser Aluminum & Chemical Corp. is now supplying a new magnesium-type aluminum sheet alloy for general metalworking requirements—K155. It is said to form easily, have good corrosion resistance, take anodized finishes well. K155 is available in plate, flat sheet, coil and circle form in all tempers in the H1 and H3 groups.

SLAB ZINC

every grade of ZINC for urgent military and civilian requirements



AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

Semifinished and Finished Steel Products

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on pages 144-145.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....75.00
INGOTS Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif, K1 ....83.00
Houston S5 .....65.00
Midland,Pa. C18 .....57.00
Munhall,Pa. U5 .... 62.00
BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 .....$62.00
Clairton,Pa. U5 .....62.00
Ensley,Ala. T2 .....62.00
Fairfield,Ala. T2 .....62.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....62.00
Johnstown,Pa. B2 .....62.00
Lackawanna,N.Y. B2 ..62.00
Munhall,Pa. U5 .....62.00
So.Chicago,Ill. U5 .....62.00
So.Duquesne,Pa. U5 .....62.00
Carbon, Forging (NT)
Bessemer,Pa. U5 .....$75.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....75.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....75.50
Fairfield,Ala. T2 .....75.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....75.50
Geneva,Utah C11 ....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 .....75.50
Lackawanna,N.Y. B2 ..75.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....75.50
Seattle B3, S24 .....89.50
So. Chicago R2, W14 ..70.50
So.Chicago U5 .....75.50
So.Duquesne,Pa. U5 ....75.50
So.SanFrancisco B3 ..89.50
Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....82.00
Houston S5 .....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....76.00
Munhall,Pa. U5 .....82.00
Seattle S24 .....96.00
So.Chicago R2, W14...76.00
So.Chicago U5 .....82.00
So.Duquesne,Pa. U5 ....82.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00
ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R3 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ..87.50
SHEET BARS (NT)
Fontana,Calif. K1 ....$93.18
SKELP
Aliquippa,Pa. J5 .....3.85
Munhall,Pa. U5 .....3.75
Warren,O. R2 .....3.55
Youngstown R2, ...3.55
Youngstown, U5 .....3.75
WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.525
Donora,Pa. A7 .....4.525
Fairfield,Ala. T2 .....4.525
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.525
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ..4.575
Monessen,Pa. P7 ....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburgh,Calif. C11 ..5.175
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 ....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ...4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ....5.325
Worcester,Mass. A7 ...4.825
SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.925
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.925
So.Chicago,Ill. U5 .....4.925
STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....4.10
Bessemer,Ala. T2 .....4.10
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 .....4.50
Gary,Ind. U5 .....4.10
Geneva,Utah C11 .....4.10
Houston S5 .....4.25
Ind.Harbor,Ind. I-2 ....4.10
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ....4.15
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 .....4.10
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....4.95
Seattle B3 .....4.50
So.Chicago,Ill. W14 ....3.85
So.Chicago U5 .....4.10
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.80
Weirton,W.Va. W6 ....4.10
Wide Flange
Bethlehem,Pa. B2 .....4.15
Clairton,Pa. U5 .....4.10
Fontana,Calif. K1 ....5.05
Lackawanna,N.Y. B2 ....4.15
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 .....4.10
Alloy Stand. Shapes
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 ....6.125
Gary,Ind. U5 .....5.00
Munhall,Pa. U5 .....5.00
So.Chicago,Ill. U5 .....5.00
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.175
Bessemer,Ala. T2 .....6.175
Bethlehem,Pa. B2 .....6.20
Clairton,Pa. U5 .....6.175
Fairfield,Ala. T2 .....6.175
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....6.175
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 ....5.80
Lackawanna,N.Y. B2 ....6.20
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....6.175
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....6.175
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30
H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....6.20
Lackawanna,N.Y. B2 .. 6.20
Munhall,Pa. U5 .....6.125
So.Chicago,Ill. U5 .....6.125
BEARING PILES
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 .....4.10
PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.25
Bessemer,Ala. T2 .....6.25
Clairton,Pa. U5 .....6.25
Cleveland R2 .....5.95
Cleveland J5 .....6.25
Conshohocken,Pa. A3 ..6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....6.25
Fontana,Calif.(30) K1 ..6.65
Gary,Ind. U5 .....6.25
Geneva,Utah C11 .....6.25
Ind.Harbor,Ind. I-2 ...5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 ....5.95
Munhall,Pa. U5 .....6.25
Pittsburgh J5 .....6.25
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....6.25
SparrowsPoint,Md. B2..5.95
Warren,O. R2 .....5.95
Youngstown U5 .....6.25
Youngstown Y1 .....6.45
PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 .....5.55
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.55
SparrowsPoint,Md. B2..5.25
FLOOR PLATES
Cleveland J5 .....5.15
Conshohocken,Pa. A3 ...5.15
Ind.Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 .....4.95
PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.70
Geneva,Utah C11 .....5.25
PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....4.10
Ashland,Ky. (15) A10 ..4.10
Bessemer,Ala. T2 .....4.10
Clairton,Pa. U5 .....4.10
Claymont,Del. C22 ....4.35
Cleveland R2 .....3.90
Cleveland J5 .....4.10
Coatesville,Pa. L7 ....4.35
Conshohocken,Pa. A3 ....4.55
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....4.10
Fontana,Calif.(30) K1..4.55
Gary,Ind. U5 .....4.10
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 .....4.10
Harrisburg,Pa. C5 ....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2 ....4.10
Johnstown,Pa. B2 .....4.10
Lackawanna,N.Y. B2 ....4.10
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.10
Pittsburgh J5 .....4.10
Riverdale,Ill. A1 .....4.10
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. W14 ....3.90
So.Chicago U5 .....4.10
SparrowsPoint,Md. B2 ...4.10
Steubenville,O. W10 ...3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 ....4.20
Youngstown R2, Y1 ....3.90
Youngstown U5 .....4.10
PLATES, Wrought Iron
(Add 4.7% to base, extras)
Economy,Pa. B14 ....8.60
BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.95
Aliquippa,Pa. J5 .....4.15
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....4.15
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....4.15
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....4.15
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 .....4.15
Houston S5 .....4.35
Ind.Harbor,Ind. I-2 ....4.15
Johnstown,Pa. B2 .....4.75
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ....4.75
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 .....4.15
Portland,Oreg. O4 .....4.70
Seattle B3, N14, S24 ..4.70
So.Chicago R2, W14 ...3.95
So.Chicago U5 .....4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFran.,Calif. B3...4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 ....4.10
Youngstown R2 .....3.95
Youngstown U5 .....4.15
BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Youngstown U5 .....5.20
BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.15
Atlanta A11 .....4.25
Niles,Calif. P1 .....4.65
SanFrancisco S7 .....5.00
BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.875
Buffalo R2 .....4.675
Canton,O. T7 .....4.72
Canton,O. R2 .....4.675
Clairton,Pa. U5 .....4.875
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 ....5.725
Gary,Ind. U5 .....4.875
Houston S5 .....5.075
Ind.Harbor,Ind. I-2 ....4.875
Johnstown,Pa. B2 .....4.875
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2 ....4.875
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.675
So.Chicago R2, W14...4.675
So.Chicago U5 .....4.875
So.Duquesne,Pa. U5 ....4.875
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.875
BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.225
Bessemer,Ala. T2 .....6.225
Bethlehem,Pa. B2 ...5.925
Clairton,Pa. U5 .....6.225
Cleveland R2 .....5.925
Ecorse,Mich. G5 .....6.675
Fairfield,Ala. T2 .....6.225
Fontana,Calif. K1 ....7.175
Gary,Ind. U5 .....6.225
Ind.Harbor,Ind. I-2 ...5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....6.225
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ....6.225
So.SanFrancisco B3 ..6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....6.225
BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ...4.925
BeaverFalls,Pa. R2 ...4.925
BeaverFalls,Pa. M12 ..4.925
Buffalo B5 .....4.975
Camden,N.J. P13 ....5.375
Carnegie,Pa. C12 ....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7 .....5.20
Cleveland C20 .....4.925
Detroit P17, R7 .....5.075
Detroit B5 .....5.125
Donora,Pa. A7 .....5.20
Elyria,O. W8 .....4.925
FranklinPark,Ill. N5 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 ....4.925
Hammond,Ind. L2,M13.4.925
Hartford,Conn. R2 ....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 ...5.475
Massillon,O. R2, R8 ..4.925
Monaca,Pa. S17 .....4.925
Newark,N.J. W18 ....5.375
Plymouth,Mich. P5 ...5.175
Pittsburgh J5 .....5.20
Putnam,Conn. W18 ....5.475
Readville,Mass. C14 ...5.475
St. Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....5.20
Youngstown Y1 .....4.925
BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.00
BeaverFalls,Pa. M12 ...6.00
Bethlehem,Pa. B12 ....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.95
Carnegie,Pa. C12 .....6.00
Chicago B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.00
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Detroit B5 .....6.25
Donora,Pa. A7 .....6.00
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2,M13..6.00
Hartford,Conn. R2 ....6.40
Lackawanna,N.Y. B2 ..6.00
Mansfield,Mass. B5 ....6.40
Massillon,O. R2,R8 ....6.00
Midland,Pa. C18 .....6.00
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.30
Plymouth,Mich. P5 ....6.25
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 ....6.25
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.00
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00
BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.90
Atlanta A11 .....4.25
Buffalo R2 .....3.90
Cleveland R2 .....3.90
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....4.15
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 .....4.15
Houston S5 .....4.35
Ind.Harbor,Ind. I-2 ....4.15
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 .....4.15
SandSprings,Okla. S5 ..4.90
Seattle B3, N14, S24 ..4.70
So.Chicago,Ill. R2 ....3.90
So.Duquesne,Pa. U5 ....4.15
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ..3.90
Sterling,Ill. (1) N15 ....4.10
Struthers,O. Y1 .....3.90
Torrance,Calif. C11 ....4.85
Youngstown R2 .....3.90
Youngstown U5 .....4.15

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur D. Driver Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lake Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

BARS, Reinforcing
(Fabricated; to consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...5.25
KansasCity S5 .....6.05
LosAngeles B3 .....5.45
Marion,O. P11 .....5.25
Seattle B3, N14 .....5.80
Sand Springs S5 .....6.45
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ..5.25
Williamsport,Pa. S19 ...5.35

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngt,W.Va.(3) W7 ..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Monawanda(3,4) B12 ..5.00
Williamsport(3) S19 ...5.25
Williamsport,Pa. S19 ...5.35

BARS, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa.(S.R.) B14 9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt) L5.14.50
McK.Rks.(S.R.) L5 ...9.60
McK.Rks.(D.R.) L5 ..13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8)A10 ...3.775
Butler,Pa. A10 .....3.925
Cleveland R2 .....3.775
Cleveland J5 .....3.925
Conshohocken,Pa. A3 ..4.325
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.925
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....3.925
Geneva,Utah C11 .....4.025
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2 ....3.925
Irvin,Pa. U5 .....3.925
Lackawanna,N.Y. B2 ..3.925
Munhall,Pa. U5 .....3.925
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ....4.625
Pittsburgh J5 .....3.925
Riverdale Ill. A1 .....3.925
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ...3.775
SparrowsPoint,Md. B2 ..3.925
Steubenville,O. W10 ...3.775
Torrance,Calif. C11 ....4.625
Warren,O. R2 .....3.775
Weirton,W.Va. W6 ....3.775
WestLechburgh,Pa. A4..3.925
Youngstown Y1 .....3.775
Youngstown U5 .....3.925

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ..5.575

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland R2 .....6.925
Cleveland J5 .....7.225
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 ....7.975
Gary,Ind. U5 .....7.225
IndianaHarbor,Ind. Y1 .7.425
IndianaHarbor,Ind. I-2..6.925
Irvin,Pa. U5 .....7.225
Lackawanna(37) B2 ..6.925
Pittsburgh J5 .....7.225
SparrowsPoint (38) B2. 6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy
Cleveland R2 .....5.675
Cleveland J5 .....5.90
Conshhocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.90
Fontana,Calif. K1 ....6.775
Gary,Ind. U5 .....5.90
Ind.Harbor,Ind. I-2 ...5.675
Ind.Harbor,Ind. Y1 ...6.175
Irvin,Pa. U5 .....5.90
Lackawanna(35) B2 ..5.675
Munhall,Pa. U5 .....5.90
Pittsburgh J5 .....5.90
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 .....5.90
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.90
Youngstown Y1 .....6.175

SHEETS, Cold-Rolled Steel
(Commercial Quality)
Butler,Pa. A10 .....4.775
Cleveland R2 .....4.575
Cleveland J5 .....4.775
Ecorse,Mich G5 .....4.775
Fairfield,Ala. T2 .....4.775
Follansbee,W.Va. F4 ..5.675
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.775
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2 ....4.775
Irvin,Pa. U5 .....4.775
Lackawanna,N.Y. B2 ..4.775
Middletown,O. A10 ....4.775
Pittsburg,Calif. C11 ....5.725
Pittsburgh J5 .....4.775
SparrowsPoint,Md. B2 ..4.775
Steubenville O. W10 ...4.575
Warren,O. R2 .....4.575
Weirton,W.Va. W6 ....4.575
WestLeechburg,Pa. A4..5.45
Youngstown Y1 .....4.575

SHEETS, Galv'd No. 10 Steel
AlabamaCity,Ala. R2 ..5.075
Ashland,Ky.(8) A10 ...5.275
Canton,O. R2 .....5.075
Delphos,O. N16 .....5.675
Dover,O. R1 .....5.475
Fairfield,Ala. T2 .....5.275
Gary,Ind. U5 .....5.275
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2 ...5.075
Irvin,Pa. U5 .....5.275
Kokomo,Ind.(13)C16 ..5.325
MartinFerry,O. W10 ..5.075
Niles,O. N12 .....6.275
Pittsburg,Calif. C11 ....6.025
SparrowsPoint,Md. B2 .5.075
Steubenville,O. W10 ...5.075
Torrance,Calif. C11 ....6.025
Weirton,W.Va. W6 ....5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy
Irvin,Pa. U5 .....7.625
SparrowsPoint(39) B2..7.775

SHEETS, Galvannealed Steel
Canton,O. R2 .....5.625
Irvin,Pa. U5 .....5.825
Kokomo,Ind.(13) C16 ..5.875
Niles,O. N12 .....6.825

SHEETS ZINCGRIP STEEL No. 10
Butler,Pa. A10 .....5.525
Middletown,O. A10 ....5.525

BLUED Stock, 29 ga.
Yorkville,O. W10 .....7.00
Follansbee,W.Va. F4 ...7.10
Follansbee (23) F4 ....6.425

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ...5.175
Cleveland R2 .....4.925
Gary,Ind. U5 .....5.175
GraniteCity,Ill. G4 ....5.625
Ind.Harbor,Ind. I-2 ....5.175
Irvin,Pa. U5 .....5.175
Middletown,O. A10 ....5.175
Youngstown Y1 .....4.925

BLACK PLATE
(Base Box)
Aliquippa,Pa. J5 .....$6.50
Fairfield,Ala. T2 .....6.60
Gary,Ind. U5 .....6.50
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. I-2,Y1 .6.50
Irvin,Pa. U5 .....6.50
Niles,O. R2 .....6.50
Pittsburg,Calif. C11 ....7.25
SparrowsPoint,Md. B2 ..6.60
Warren,O. R2 .....6.50
Weirton,W.Va. W6 ....6.50
Yorkville,O. W10 .....6.50

HOLLOWARE ENAMELING
Black Plate (29 gage)
Follansbee,W.Va. F4 ...6.10
Gary,Ind. U5 .....6.10
GraniteCity,Ill. G4 ....6.30
Ind.Harbor,Ind. Y1 ....6.10
Irvin,Pa. U5 .....6.10
Yorkville,O. W10 .....6.35

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2 ..	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5 ...	5.875	6.125
Ind.Harbor I-2 .	5.875	6.125
Irvin,Pa. U5 ...	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O.W10	5.875	....
Pittsburg,Cal.C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal.C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron
Ashland,Ky. A10 .....6.125
Fairfield,Ala. T2 ....6.125
MartinsFerry,O. W10 ..6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier
Ashland,Ky.(8) A10 ..4.025
Cleveland R2 .....4.375
Ind.Harbor,Ind. I-2 ....4.175
Warren,O. R2 .....4.375

SHEETS, Cold-Rolled Ingot Iron
Butler,Pa. A10 .....5.075
Cleveland R2 .....5.175
Middletown,O. A10 ....5.075
Warren,O. R2 .....5.175

SHEETS, Galvanized Ingot Iron No. 10 flat
Ashland,Ky.(8) A10 ...5.325
Canton,O. R2 .....5.825

SHEETS, ZINCGRIP Ingot Iron
Butler,Pa. A10 .....5.575
Middletown,O. A10 ....5.575

SHEETS, ALUMINIZED
Butler,Pa. A10 .....8.425

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 ....5.875

MANUFACTURING TERNES
(Special Coated)
Fairfield,Ala. T2 .....$7.85
Gary,Ind. U5 .....7.75
Irvin,Pa. U5 .....7.75
Yorkville,O. W10 .....7.75

SHEETS, LT. Coated Ternes, 6 lb
Yorkville,O. W10 ....$8.65

SHEETS, Mfg. Ternes, 8 lb
(Commercial Quality)
Gary,Ind. U5 .....$9.75
Yorkville,O. W10 .....9.75

SHEETS, Long Terne Steel
(Commercial Quality)
BeechBottom,W.Va.W10 5.475
Gary,Ind. U5 .....5.675
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....5.675
Niles,O. N12 .....6.275
Weirton,W.Va. W6 ....5.475

ROOFING SHORT TERNES
(8 lb Coated)
Gary,Ind. U5 .....9.75

TIN PLATE, American 1.25 Coke (Base Box)	lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2.	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1.	8.70	8.95
Irvin,Pa. U5 ...	8.70	8.95
Pitts.,Cal. C11 ..	9.45	9.70
Sp.Pt.,Md. B2 ..	8.80	9.05
Warren,O. R2 ..	8.70	...
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10.	8.70	8.95

STRIP, Hot-Rolled
High-Strength Low-Alloy
Bessemer,Ala. T2 .....5.65
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 .....6.75
Gary,Ind. U5 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Lackawanna,N.Y. B2 ..5.70
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.65
So.SanFrancisco(25)B3 .6.40
SparrowsPoint,Md. B2..5.70
Warren,O. R2 .....5.65
Weirton,W.Va. W6 ....6.10
Youngstown Y1 .....6.15
Youngstown U5 .....5.65

STRIP, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5 .....7.45
Cleveland A7 .....7.30
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.15
Lackawanna,N.Y. B2 ..7.90
Sharon,Pa. S3 .....7.30
SparrowsPoint,Md. B2 .7.90
Warren,O. R2 .....7.30
Weirton,W.Va. W6 ....7.95
Youngstown Y1 .....7.80

STRIP, Cold-Rolled Alloy Steel
Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....11.40
Dover,O. G6 .....11.90
Fontana,Calif. K1 ....13.30
Harrison,N.J. C18 ....12.00
Midland,Pa. C18 .....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8.12.15
Pawtucket,R.I.(12) N8.12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ..11.70
Youngstown C8 .....12.00

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ..3.975
Warren,O. R2 .....4.325

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....5.70

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower) Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths) ...	...	7.85	9.10	9.90
Brackenridge,Pa. A4 ...	...	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths) ...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2 ... 8.05	*8.35*	*8.85*	*(34)*	...
Mansfield,O. E6 (cut lengths) 7.20	7.35	7.85	9.10	9.90
Newport,Ky. N9 (cut lengths) ...	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths) .. 7.05	7.35	7.85	...	...
Vandergrift,Pa. U5 ...	...	*8.85*	...	...
Warren,O. R2 ... 7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10 ...	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4 ...	10.95	....	....	....
Newport,Ky. N9 (cut lengths).	10.45	....	....	....
Vandergrift,Pa. U5 ...	10.95	11.50	12.20	13.00
Warren,O. R2 ...	10.95	....	....	....
Zanesville,O. A10 ...	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.) ...	....	....	15.35	15.85
Vandergrift,Pa. U5 ...	13.50	14.35	15.35	15.85

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7 ...	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1 ...	...	...	8.55	10.50	....
Carnegie,Pa. S18 ...	...	7.65	8.25	10.30	12.50
Cleveland A7 ...	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	....	....
Detroit D2 ...	6.45	7.50	8.10	....	....
Dover,O. G6 ...	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6 ...	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	...	...	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
NewYork W3 ...	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base .	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3 ...	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5 ...	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2 ..	6.30	7.60	8.20	10.15	12.65
Warren,O. T5 ...	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8 ...	...	7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. R5 ...	...	...	*11.875*	*14.075*	*16.925*
Harrison,N.J. C18	...	...	10.30	12.50	15.35
New York W3 ...	...	...	10.30*	12.50*	15.35*
Youngstown C8 ...	...	...	10.30	12.50	15.35

* Plus $1.575 per 100 lb.

T11 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellanceDiv.,EatonMfg.
R9 Rome Mfg. Co.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I.Div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div.,Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

STRIP, Hot-Rolled Carbon
Ala.City,Ala.(27) R2...3.725
Alton,Ill. L1 .....4.20
Ashland,Ky.(8) A10 ... 3.925
Atlanta A11 .....4.275
Bessemer,Ala. T2 .....3.925
Bridgeport,Con.(10)S15 4.225
Buffalo(27) R2 .....3.725
Butler,Pa. A10 .....3.925
Carnegie,Pa. S18 ....4.225
Consionocken,Pa. A3 ..4.325
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.025
Fairfield,Ala. T2 .....3.925
Fontana,Calif. K1 ....5.175
Gary,Ind. U5 .....3.925
Houston,Tex. S5 .....4.125
Ind.Harbor,Ind. I-2 ....3.925
Johnstown,Pa.(2) B2..3.725
KansasCity,Mo.(9) S5..4.325
Lackaw'na,N.Y.(32) B2 3.725
LosAngeles(25) B3 ....4.475
Milton,Pa. B6 .....4.35
Minnequa,Colo. C10 ...4.775
NewBritian(10) S15 ...4.225
N.Tonawanda,N.Y.B11 3.725
Pittsburg,Calif. C11 ....4.675
Riverdale,Ill. A1 .....3.925
SanFrancisco S7 .....5.00
Seattle(25) B3 .....4.725
Seattle N14 .....4.725
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. W14 ...3.725
So.SanFrancisco(25) B3 4.475
SparrowsPoint,Md. B2..3.725
Sterling,Ill. N15 .....4.725
Torrance,Calif. C11 ... 4.675
Warren,O. R2 .....3.725
Weirton,W.Va. W6 ....3.825
WestLeechburgh,Pa. A4.3.975
Youngstown Y1 .....3.725
Youngstown U5 .....3.925

STRIP, Hot-Rolled Alloy
Bridgeprt,Conn.(10)S15. 6.05
Carnegie,Pa. S18 .....6.45
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.40
Houston,Tex. S5 .....6.50
KansasCity, Mo. S5 ....6.70
Midland,Pa. C18 .....5.85
NewBritn.,Conn.(10)S15 6.05
Sharon,Pa. S3 .....6.45
Youngstown U5 .....6.40

STRIP, Cold-Rolled Carbon
Anderson,Ind.(40) G6 ..5.50
Bridgeprt,Conn.(10)S15. 5.80
Butler,Pa. A10 .....5.45
Cleveland A7, J5 .....5.45
Dearborn,Mich. D3 .....6.05
Detroit D2 .....5.60
Detroit M1 .....5.45
Dover,O.(40) G6 .....5.50
Ecorse,Mich. G5 .....5.30
Follansbee,W.Va. F4 ...5.10
Fontana,Calif. K1 .....7.00
FranklinPark,Ill.(40)T6 .5.35
Ind.Harbor,Ind. I-2 ....5.70
Lackawanna,N.Y. B2 ..5.10
LosAngeles C1 .....7.15
Mattapan,Mass. T6 ....5.95
Middletown,O. A10 ....5.45
NewBritain(10) S15 ....5.80
NewCastle,Pa. B4 .....5.80
NewCastle,Pa.(40) E5 ..5.70
NewHaven,Conn. A7 ....5.95
NewHaven,Conn. D2....5.85
Pawtucket,R.I. R3 ....6.45
Pawtucket,R.I.(21) N8..6.30
Riverdale,Ill.(40) A1 ....5.70
Rome,N.Y. R6 .....5.10
Sharon,Pa. S3 .....5.80
SparrowsPoint,Md. B2 .5.10
Trenton,N.J. R5 .....6.45
Wallingford,Conn. W2 ..6.30
Warren,O.(40) T5 .....5.70
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown C8 (40) ...5.70
Youngstown Y1 .....5.10

STRIP, Electro Galvanized
Dover,O. G6 .....5.50
Warren,O. T5 .....5.70
Weirton,W.Va. W6 .....5.10
Youngstown C8 .....5.70

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.45
Riverdale,Ill. A1 .....4.50
Sharon,Pa. S3 .....4.55
Youngstown U5 .....4.15

ROPE WIRE
Alton,Ill. L1 .....9.30
Bartonville,Ill. K4 .....8.95
Buffalo W12 (43) 8.55
Fostoria,O. S1 (43) 8.85
Youngstown,Pa. B2 (43)..8.55
Monessen,Pa. P16 (43)..8.55
Monessen,Pa. P7 (43) ..8.80
Muncie,Ind. I-7 (43) ...8.75
Palmer,Mass. W12 (43)..8.85
Portsmouth,O. P12 (43).8.85
Roebling,N.J. R5 .....9.25
SparrowsPt. B2 (43) ..8.65
Struthers,O. Y1 (43) ...8.55
Worcester J4, T6 (43) ..8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Merchant Quality
(6 to 8 gage) An'ld. Galv.
AlabamaCity R2..6.075 6.325
Aliquippa J5 ...6.075 6.525‡
Atlanta A11 ....6.325 6.675
Bartonville(19)K4 6.075 6.40
Buffalo W12 ....5.225 ....
Cleveland A7 ....6.675 ....
CrawfordsvilleM8 6.175 6.475
Donora,Pa. A7 ....6.675 7.075
Duluth,Minn. A7 ..6.675 7.075
Fairfield T2 ....6.675 7.075
Houston,Tex S5..6.475 6.80
Johnstown B2 ...6.075 6.45†
Joliet,Ill. A7 ....6.675 7.075
KansasCy.,Mo. S5.6.675 7.00
Kokomo C16 ....6.175 6.425
LosAngeles B3 ..7.025 ....
Minnequa C10 ...6.325 6.70*
Monessen P7 ....6.075 6.45
Palmer W12 .....5.525 ....
Pitts.,Calif. C11 ..7.025 8.025
Prtsmth.(18)P12..6.475 ....
Rankin A7 ....6.675 7.075
So.Chicago R2 ..6.075 6.325
So.S.Fran. C10 ..7.025 7.40*
SparrowsPt. B2 ..6.175 6.55†
Sterl'g(1)(48)N15 6.375 6.925
Struthers,O. Y1 ...6.075 6.475
Worcester A7 ....6.975 ....

*Based on 14c zinc; †14.50c zinc; ‡17.5c zinc.

WIRE (16 gage) Anl'd. Galv. Stone Stone
(Add 4.7% on base and extras)
Aliquippa J5 ....10.15 12.15
Bartonville(19)K4 10.25 12.00*
Cleveland A7 ....12.00 13.55
Crawfrdsville M8.10.73 12.51
Fostoria,O. S1 ..10.40 13.00
Johnstown B2 ..10.73 12.58§
Kokomo C16.10.625† 12.325§
Minnequa C10..10.40 12.425*
Palmer,Mass.W12.10.25 12.15
Pitts.,Cal. C11 ...12.35 13.90
SparrowsPt. B2 .10.84 12.68§
Sterling(1) N15 10.73† 12.15†
Waukegan A7 ...12.00 13.55
Worcester A7 ...12.30 13.85

*Based on 14c zinc; §14.50c zinc. †Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon
AlabamaCity,Ala. R2..5.225
Aliquippa,Pa. J5 (42)...4.85
Atlanta A11 .....5.475
Alton,Ill. L1 .....5.45
Bartonville,Ill. K4 ....5.325
Buffalo W12 .....5.225
Chicago W13 .....5.475
Cleveland C20 .....5.225
Cleveland A7 .....5.525
Crawfordsville,Ind. M8.5.325
Donora,Pa. A7 .....5.525
Duluth,Minn. A7 .....5.525
Fairfield,Ala. T2 .....5.525
Fostoria,O. (24) S1 ...5.725
Houston S5 .....5.625
Johnstown,Pa. B2 ....5.225
Joliet,Ill. A7 .....5.525
KansasCity,Mo. S5 ....5.825
Kokomo,Ind C16 .....5.325
LosAngeles B3 .....6.175
Minnequa,Colo. C10 ...5.475
Monessen,Pa. P7 .....5.475
Newark 6-8 ga I-1 ....5.88
No.Tonawanda B11 ...5.225
Palmer,Mass. W12 ....5.525
Pittsburg,Calif. C11 ....6.475
Portsmouth,O. P12 ....5.625
Rankin,Pa. A7 .....5.525
So.Chicago,Ill. R2 ....5.225
So.SanFrancisco C10 ..6.175
SparrowsPoint,Md. B2..5.325
Sterling,Ill.(1) N15 ....5.225
Struthers,O. Y1 .....5.225
Waukegan,Ill. A7 .....5.525
Worcester,Mass. A7 ...5.825

WIRE, Cold-Rolled Flat
Anderson,Ind. G6 .....6.95
Buffalo W12 (43) 6.35
Cleveland A7 .....6.95
Crawf'sville,Ind.MS(43). 5.70
Dover,O. G6 .....6.95
Fostoria,O. S1 (43) 6.00
Kokomo,Ind. C16 (43)..5.70
FranklinPark,Ill. T6(43) 6.20
Massillon,O. R8 (43) 5.85
Monessen,Pa. P16 (43)..6.35
Monessen,Pa. P7 (43) ..6.10
Pawtkt,R.I.(12) N8 (43)6.85
Trenton,N.J. R5 (43) ... 7.25
Worcester,Mass. A7 ....7.25
Worcester,Mass. T6 (43).6.50
Worcester,Mass.W12(43) 6.65

WIRE, Galv'd ACSR for Cores
Bartonville,Ill. K4 .....8.90
Monessen,Pa. P16 (43)..8.50
Muncie,Ind. I-7 (43) ..8.70
Roebling,N.J. R5 .....9.30
SparrowsPt.,Md. B2(43).8.60
Johnstown,Pa. B2 (43)..8.50

WIRE, MB Spring, High Carbon
Aliquippa,Pa. J5 (43) ..6.25
Alton,Ill. L1 .....6.75
Bartonville,Ill. K4 .....6.64
Buffalo W12 (43) 6.25
Cleveland A7 .....6.925
Donora,Pa. A7 .....6.925
Duluth,Minn. A7 .....6.925
Fostoria,O. S1 (43) 6.25
Johnstown,Pa. B2 (43)..6.25
Millbury(12) N6 (43)...8.05
Minnequa,Colo. C10(43).6.50
Monessen,Pa. P7 (43) ..6.25
Monessen,Pa P16 .....6.75
Muncie,Ind. I-7 (43) ...6.45
Palmer,Mass W12 (43) 6.55
Pittsburg,Calif. C11 ....7.875
Roebling,N.J. R5 .....6.85
Portsmouth,O. P12(43)..6.25
So.Chicago,Ill. R2 (43)..6.25
So.SanFran. C10 (43) 7.20
SparrowsPt.,Md. B2 (43)6.35
Struthers,O Y1 (43) ...6.25
Trenton,N.J. A7 .....7.225
Waukegan,Ill. A7 .....6.925
Worcester A7 .....7.225
Worcester, T6, W12 (43).6.55
Worcester,Mass. J4 (43).6.75

Wire Upholstery Spring
Aliquippa,Pa. J5 .....6.275
Alton,Ill. L1 .....6.50
Buffalo W12 .....6.275
Cleveland A7 .....6.625
Donora,Pa. A7 .....6.625
Duluth,Minn. A7 .....6.625
Johnstown,Pa. B2 .....6.275
LosAngeles B3 .....7.225
Minnequa,Colo. C10 ...6.525
Monessen,Pa. P7 .....6.275
Monessen,Pa. P16(42) ..6.40
NewHaven,Conn. A7 ...6.925
Palmer,Mass. W12 ....6.575
Pittsburg,Calif. C11 ....7.575
Portsmouth,O. P12 ....6.275
Roebling,N.J. R5 ....6.575
So.Chicago,Ill. R2 ....6.275
So.SanFrancisco C10 ...7.225
SparrowsPoint,Md B2..6.375
Trenton,N.J. A7 .....6.925
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ...6.925

WIRE, Fine & Weaving (8"Coils)
Alton,Ill. L1 (43) 9.20
Bartonville,Ill. K4 .....9.42
Buffalo W12 (43) 8.90
Chicago W13 .....9.32
Cleveland A7 .....10.05
Crawf'sville,Ind. M8(43) 8.90
Fostoria,O. S1 (43)) 8.90
Johnstown,Pa. B2 (43)..8.90
Kokomo,Ind C16 (43).8.90
Monessen,Pa. P16 (43)..8.90
Muncie,Ind. I-7 (43) ...9.10
Palmer,Mass. W12 (43).9.20
Roebling,N.J. R5 .....10.35
Waukegan,Ill. A7 ....10.05
Worcester,Mass. A7 ...10.35
Worcester,Mass. T6(43).9.20

WIRE, Tire Bead
Bartonville,Ill. K4 ....11.51
Monessen,Pa. P16 (43).11.40
Roebling,N.J. R5 .....12.30

WOVEN FENCE, 9-15½ Ga. Col.
AlabamaCity,Ala R2 ...135
Ala.City,Ala..17-18ga.R2 222
Aliqu'pa,Pa.9-14½ga.J5 139‡
Atlanta A11 140
Bartonville,Ill.(19) K4 ..137
Crawfordsville,Ind. M8 ..138
Donora,Pa. A7 140
Duluth,Minn. A7 140
Fairfield,Ala. T2 140
Houston,Tex. S5 145
Johnstown,Pa. B2 138
Johnstown 17ga.,6" B2 .229
Joliet,Ill. A7 140
KansasCity,Mo. S5 149
Kokomo,Ind. C16 140
Minnequa,Colo. C10 ....146*
Monessen,Pa. P7 138
Pittsburg,Calif. C11 163
Rankin,Pa. A7 140
So.Chicago,Ill. R2 135
Sterling,Ill. (1) N15 136

*On 14c zinc; ‡17.5c zinc.

FENCE POSTS Col.
ChicagoHts.,Ill. C2 145
Duluth,Minn. A7 (49)...136
Franklin,Pa. F5 145
Huntington,W.Va. W7....145
Johnstown,Pa. B2 148
Marion,O. P11 140
Minnequa,Colo. C10 138
Moline,Ill. R2 136
So.Chicago,Ill. R2 140
Tonawanda,N.Y. B12 148
Williamsport,Pa. S19 ...158

Wire, Barbed Col.
AlabamaCity,Ala. R2 144
Aliquippa,Pa. J5 .....148‡
Atlanta A11 149
Bartonville,Ill.(19) K4 ..146
Crawfordsville,Ind M8 ..147
Donora,Pa. A7 153
Duluth,Minn. A7 153
Fairfield,Ala. T2 153
Houston,Tex. S5 154
Johnstown,Pa. B2 145
Joliet,Ill. A7 153
KansasCity,Mo. S5 158
Kokomo,Ind. C16 149
Minnequa,Colo. C10 ....153*
Monessen,Pa. P7 147
Pittsburg,Calif. C11 173
Rankin,Pa. A7 153
So.Chicago,Ill. R2 144
So.SanFran.,Calif. C10..167*
SparrowsPoint,Md. B2 ..147
Sterling,Ill.(1)N15 151

*On 14c zinc; ‡17.5c zinc.

BALE TIES, Single Loop Col.
AlabamaCity,Ala. R2 ...132
Atlanta A11 135
Bartonville,Ill.(19) K4 ..132
Crawfordsville,Ind. M8 ..132
Donora,Pa. A7 149
Duluth,Minn. A7 149
Fairfield,Ala. T2 149
Joliet,Ill. A7 149
KansasCity,Mo. S5 144
Kokomo,Ind. C16 134
Minnequa,Colo. C10 137
Pittsburg,Calif. C11 173
So.Chicago,Ill. R2 132
So.SanFran.,Calif. C10 ..156
SparrowsPoint,Md. B2 ..134
Sterling,Ill.(1) N15 143

NAILS, Stock
To dealers & mfrs. (7) Col.
AlabamaCity,Ala. R2 ...127
Aliquippa,Pa. J5 127
Atlanta A11 130
Bartonville,Ill. (19) K4..127
Chicago,Ill. W13 127
Cleveland A9 (44) 125
Crawfordsville,Ind. M8 ..127
Donora,Pa. A7 131
Duluth,Minn. A7 131
Fairfield,Ala. T2 131
Galveston,Tex. D7 135
Houston,Tex. S5 135
Johnstown,Pa. B2 127
Joliet,Ill. A7 131
KansasCity,Mo. S5 139
Kokomo,Ind. C16 129
Minnequa,Colo. C10 (44).123
Monessen,Pa. P7 127
Pittsburg,Calif. C11 150
Portsmouth,O. P12 132
Rankin,Pa. A7 131
So.Chicago,Ill. R2 127
SparrowsPt. Md. B2 129
Sterling,Ill. (1) N15 127
Worcester,Mass. A7 137

NAILS, Cut (100 lb keg.)
to dealers (33)
Conshohocken,Pa. A3 ..$7.80
Wheeling,W.Va. W10 ...7.80

RAILS

	Std. No. 1	Std. No. 2	All No. 2	Std. Tee Rail 60 lb & Over
Bessemer,Pa. U5	*4.325*	*4.225*	*4.275*	*5.2*
Ensley,Ala. T2	*4.325*	*4.225*	....	*5.2*
Fairfield,Ala. T2	....	....	....	*5.2*
Gary,Ind. U5	*4.325*	*4.225*	*4.275*	
Huntington,W.Va. W7	....	....	....	5.6
IndianaHarbor,Ind. I-2	*4.325*	*4.225*	*4.275*	
Johnstown,Pa. B2	....	....	...(16)	5.4
Lackawanna,N.Y. B2	*4.325*	....	....	
Minnequa,Colo. C10	4.075	3.975	....	5.
Steelton,Pa. B2	*4.325*	....	....	
Williamsport,Pa. S19	....	....	....	5.

STAPLES, Polished, Stock
To dealers & mfrs. (7) Col.
AlabamaCity,Ala. R2 ...120
Aliquippa,Pa. J5 120
Atlanta A11 120
Bartonville,Ill. (19) K4..120
Chicago W13 120
Crawfordsville,Ind. M8 ..120
Donora,Pa. A7 .....
Duluth,Minn. A7 .....
Fairfield,Ala. T2 .....
Joliet,Ill. A7 .....
Johnstown,Pa. B2 120
Kokomo,Ind. C16 120
Minnequa,Colo. C10 (45).120
Monessen,Pa. P7 120
Pittsburg,Calif. C11 ....
Portsmouth,O. P12 120
Rankin,Pa. A7 .....
So.Chicago,Ill. R2 120
SparrowsPt.Md. B2 120
Sterling,Ill. (1) N15 120
Worcester,Mass. A7 ....

TRACK BOLTS (20) Treated
KansasCity,Mo. S5(46)...9.80
Lebanon,Pa. (31) B2...9.80
Minnequa,Colo. C10 ....9.80
Pittsburgh P14 .....9.80
Pittsburgh O3 .....10.60

AXLES
Ind.Harbor,Ind. S13 ...6.10
Johnstown,Pa. B2 .....5.60

TIE PLATES
Fairfield,Ala. T2 .....5.10
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2 ....5.10
Lackawanna,N.Y. B2...4.90
Minnequa,Colo. C10 ...4.90
Pittsburg,Calif. C11 ....5.25
Seattle B3 .....5.07
Steelton,Pa. B2 .....4.90
Torrance,Calif. C11 ....5.25

JOINT BARS
Bessemer,Pa. U5 .....5.25
Fairfield,Ala. T2 .....5.25
Ind.Harbor,Ind. I-2 ....5.25
Joliet,Ill. U5 .....5.25
Lackawanna,N.Y. B2 ..5.07
Minnequa,Colo. C10 ...5.07
Steelton,Pa. B2 .....5.07

STANDARD TRACK SPIKES
Ind.Harbor,Ind. I-2 ....7.0
Ind.Harbor,Ind. Y1 ....6.6
KansasCity,Mo. S5 ....6.9
Lebanon,Pa. B2 .....6.6
Minnequa,Colo. C10 ....6.8
Pittsburgh J5 .....6.6
Seattle B3 .....7.1
So.Chicago,Ill. R2 .....6.6
Struthers,O. Y1 .....6.6
Youngstown R2 .....6.6

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.66
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01
W	**Cr**	**V**	**Mo**	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

FOOTNOTES
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 G & heavier
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. bas
(20) 0.25c off for untreate
(21) New Haven, Conn., bas
(22) Del. San Francisco Ba area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer tha 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricator to consumers, 5.05c
(27) Bar mill sizes.
(28) Bonderized.
(30) Sheared; add 0.35c fo universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20
(34) 9.60c for cut lengths
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 6 & narrower.
(38) 14 gage & lighter: 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035" 0.035" and heavier, 0.25c higher.
(42) Plus 0.375c per 100 l
(43) Plus 4.7% on base a extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100
(46) Plus 2.2 per cent.
(48) 6-7 gage.
(49) U-post; add 2 cols. T-post.

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	½		¾		1		1¼		1½		2		2½		3	
List Per Ft.	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c	
Pounds Per Ft.	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (††)	28.75	12.50	31.75	16.50	34.25	20	36.75	21	37.25	22	37.75	22.50	39.25	22.50	39.25	22.50
Alton, Ill. L1 (††)	25.75	9.5	28.75	13.5	31.25	17	33.75	18.5	34.25	19	34.75	19.5	36.25	19.5	36.25	19.5
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75
Etna, Pa. N2 (†)	28.75	9.50	31.75	13.50	34.25	17	36.75	18.75	37.25	19.75	37.75	20.25	39.25	21	39.25	21
Fontana, Calif. K1 (††)	15.75	0.50	18.75	3.50	21.75	7	23.75	8	24.25	9	24.75	9.5	26.25	9.5	26.25	9.5
Ind. Harbor, Ind. Y1 (††)	27.75	11.50	30.75	15.5	33.25	19.0	35.75	20.0	36.25	21.0	36.75	21.50	38.25	21.50	38.25	21.50
Lorain, O. N3 (*)	*26.25*	*16*	*29.25*	*20*	*31.75*	*23.5*	*34.25*	*23*	*34.75*	*24*	*35.25*	*24.5*	*36.75*	*23*	*36.75*	*23*
Sharon, Pa. M6	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75
Youngstown R2 (**)	28.75	12.5	31.75	16.5	34.25	20.0	36.75	21.0	37.25	22.0	37.75	22.5	39.25	22.5	39.25	22.5
Youngstown Y1 (††)	28.75	12.50	31.75	16.50	34.25	20.0	36.75	21.00	37.25	22.00	37.75	22.50	39.25	22.50	39.25	22.50
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (††)	18.25	2.5	22.25	5	24.75	7.50	26.25	9	26.25	9	26.00	8.75	28.50	11.25
Ambridge, Pa. N2 (†)	18.25	..	22.25	...	24.75	....	26.25	....	26.25	....	26.00	....	28.50	....
Lorain, O. N3 (*)	*15.75*	*4.5*	*19.75*	*5.5*	*22.25*	*8*	*24.75*	*9.5*	*23.75*	*9.50*	*23*	*8.75*	*25.5*	*11.25*
Youngstown Y1 (††)	18.25	2.5	22.5	5.0	24.75	7.5	26.25	9.0	26.25	9.0	26.0	8.75	28.5	11.25

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (**)	18.25	2.5	22.25	5.0	24.75	7.5	26.25	9.0	26.25	9.0	26.0	8.75	28.5	11.25

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 8.50c

⅞-in. under .....40 off

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		3½		4	
List Per Ft	5.5c		6c		6c		92c		$1.09	
Pounds Per Ft	0.24		0.42		0.57		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25
Butler, Pa. F6 (†)	28	+1.25	22	+4.75	16	+9.5	..	....	..	....
Etna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.50	30.25	11.50	30.25	11.50
Sharon, Pa. M6 (‡)	29.5	1.75	23	+2.25	18	+5.25	..	....	..	....
Sharon, Pa. S4 (†)	28.0	1.75	22	+1.75	16	+5	..	....	..	....
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....
Youngstown R2 (**)	...	...	....	...	....	...	30.25	13	30.25	13
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (**), 11.50c; (*), 5c; (††), 11c; with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D.	B.W.	Seamless		Elec. Weld	
In.	Gage	H.R.	C.D.	H.R.	C.D.
1	13	14.80	18.05–18.96	....	....
1¼	13	17.53	21.38–22.45	16.93	....
1½	13	19.37–20.34	23.63–24.81	18.16	....
1¾	13	22.89–24.72	27.92–30.16	20.28	....
2	13	25.65–27.71	31.29–33.81	22.73	....
2¼	13	28.89–31.20	35.24–38.06	25.62	....
2½	12	31.36–33.87	38.25–41.32	28.31	....
2½	12	34.54–37.31	42.14–45.52	31.19	....
2¾	12	37.40–40.39	45.62–49.28	33.77	....
3	12	39.89–43.08	48.65–52.56	35.76	....

STAINLESS STEEL MILL PRICES

(Cents per pound; subject to current lists of extras and standard sale conditions)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. H.R. Strip	Bars, & Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	....	34.25	29.75	35.25	....	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
305	19.50	25.50	....	36.25	37.00	37.50	....	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	....	27.00	30.75	....	32.00	34.25	44.00	....
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	....	24.50	28.25	....	29.25	....	....	....
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F	....	18.75	25.00	28.75	....	29.75	....	....	....
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A	....	28.50	29.25	34.00	....	35.00	....	....	....
440B	....	28.50	29.25	34.00	....	35.00	....	....	....
440C	....	....	29.25	34.00	....	35.00	....	....	....
446	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 10%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	....	....	19.75	26.24-27.50	77.00
304	25.00	29.50	24.50	27.50-27.77	77.00
309	30.50	35.00	....	....	....
310	36.50	41.00	....	....	144.00
316	29.50	34.00	26.00	35.92-36.50	....
317	34.50	39.00	....	....	....
318	33.50	38.00	....	....	....
321	26.50	31.00-32.00	23.00	33.00	111.00
347	27.50	32.00	24.00	33.50-33.83	130.00
405	21.25	27.75	....	....	....
410	20.75	27.25	....	....	....
Nickel	33.55	45.15	....	....	....
Inconel	41.23	54.18	....	....	165.00
Monel	34.93	46.28	....	....	....
Copper*	....	....	....	44.00	....

	Strip: Carbon Base, Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Nickel	41.00	54.00	....	....
Copper*	23.70	26.65	20.20	26.40

* Deoxidized. Production points: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+ % Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l., in bags	10.90
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99+ % Fe)	36.50
Unannealed (99+ % Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots.	78.00
Brass, 20-ton lots.	30.00-39.00
Bronze, 10-ton lots	52.25-60.00
Copper:	
Electrolytic	43.50
Reduced	43.50
Lead	21.75
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	48.50
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	87.00
Zinc, 10-ton lots.	17.50-25.00
Tungsten	Dollars
Melting grade, 99%	
60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

* plus cost of metal.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	11
⅝-in. & ⅝-in.	15
¾-in. and larger	14
Longer than 6 in.:	
All diams.	8
Lag bolts, all diams.:	
6 in. and shorter	19
over 6 in. long	16
Ribbed Necked Carriage	15
Blank	30
Plow	30
Step, Elevator, Tap and Sleigh Shoe	18
Tire Bolts	8
Boiler & Fitting-Up Bolts	28

NUTS

H.P. & C.P. Square:	Reg.	Hvy.
½-in. & smaller	10	10
⅝-in. & ⅝-in.	8	1
¾-in.-1½-in.	4	+4
1⅝-in. & larger	22	1
H.P. Hex.:		
½-in. & smaller	12	+3
⅝-in. & ⅝-in.	8	+3
¾-in.-1½-in.	4	+3
1⅝-in. & larger	4	+3
C.P. Hex.:		
½-in. & smaller	22	18
⅝-in. & ⅝-in.	19	13
¾-in. & 1½-in.	15	8
1⅝-in. & larger	2	+4

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	33	26
⅝-in. & ⅝-in.	27	19
¾-in.-1½-in.	21	11
1⅝-in. & larger	5	list
		Light
⅞-in. & smaller		33
½-in. to ⅝-in.		26
¾-in. to 1½-in.		18

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	37
1 in. and smaller diam. x over 6 in.	24

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York 3 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	5.96	7.35	7.38	6.68	...	6.56	7.64	11.27	6.59	6.55	7.78
Boston	6.66	7.54	8.93	6.81	...	6.57	7.82	11.98	6.68	6.83	7.98
Buffalo	5.95	6.85	8.71	6.47	...	6.05	7.15	11.85	6.20	6.38	7.67
Birmingham	5.80	6.65	7.70[2]	5.80	...	5.80	8.62	...	5.95	6.10	8.15
Charlotte, N. C.	6.75	7.55	8.49	6.70	...	6.80	8.09	...	6.80	6.85	...
Chicago	5.95	6.82	7.75	6.10	...	5.98	7.025	11.45	6.07	6.03	7.18
Cincinnati	6.28	6.89	8.17	6.40	...	6.28	7.38	11.87	6.54	6.55	7.60
Cleveland	5.95	6.82	8.00	6.27	...	6.04	7.10	11.59	6.40	6.25	7.51
Detroit	6.22	7.02	8.04	6.39	6.85	6.27	7.32	11.57	6.54	6.55	7.52
Houston	6.89	...	8.62	7.16	...	7.13	...	...	6.94	6.86	8.24
JerseyCity,N.J.	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Los Angeles	7.05	8.70	8.45	7.05	11.20	6.85	9.40	12.75	6.75	6.90	8.90
Milwaukee	6.12	6.99	7.92	6.27	...	6.15	7.30	11.62	6.24	6.20	7.35
Moline, Ill.	6.31	7.17	8.25	6.45	...	6.33	7.37	...	6.42	6.38	...
New York	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Newark, N. J.	6.77	7.59	8.72	6.82	...	6.75	7.90	...	6.50	6.67	8.08
Norfolk, Va.	6.75	...	...	7.30	...	7.00	8.50	...	6.85	6.95	7.65
Philadelphia	6.30	7.25	7.89	6.70	8.30	6.57	7.66	11.59	6.30	6.30	7.37
Pittsburgh	5.95	6.82	8.30	6.20	...	5.98	7.12	11.45	6.07	6.03	7.18
Portland, Oreg.	7.80	9.05	9.30	7.50	...	7.25	9.40	...	7.25	7.05	9.25
Richmond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.73	...	6.58	6.68	7.80
St. Louis	6.25	7.12	8.05	6.40	...	6.28	7.43	11.75	6.47	6.43	7.66
St. Paul	6.47	7.48	8.56	6.77	...	6.64	7.78	...	6.73	6.69	7.92
San Francisco	7.15	8.40	9.60	7.05	...	6.85	9.40	12.75	6.75	6.90	8.90
Seattle-Tacoma	7.70	8.20	9.60	7.50	...	7.07	9.54	13.00	6.76	7.05	8.90
Spokane (city)	7.40	9.40	9.80	7.15	...	7.10	9.60	13.20	7.00	7.10	9.15
Washington	6.51	7.86	8.35	7.19	...	7.07	8.15	...	7.10	7.96	8.29

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Colo rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [3]—500 to 1499 lb; [5]—1000 to 1999 lb.

Steel Distributors To Raise Prices

Warehousemen study new base price schedules being issued by mills prior to making further revisions in their quotations. Recent advances reflected higher extras.

Cleveland—District warehouse operators anticipate some slackening in demand as the vacation season approaches but so far it isn't noticeable. June volume to date stacks up well with that of May and some sellers feel the total would be larger were their stocks sufficiently in balance to permit caring for all the business offered.

Sheets, except for galvanized, are in limited supply. So are structurals, and certain bar sizes. Light plates are in somewhat tighter supply.

No consumer resistance of consequence was met by the warehouses in advancing prices recently.

Philadelphia—While district warehouses report business so far this month as being well sustained on a daily basis, they see signs of some slacking off before July 1, primarily because certain consumers will start suspending for mass vacations in the closing days of June, continuing on through the early jart of July.

This vacation factor will probably be felt throughout July and August, in one degree or another. Dollar volume, however, will not drop as much as tonnage volume, for the reason that warehouse prices will be soon reflecting the increases in mill base prices.

Boston—Volume with warehouses has eased slightly, or at least buying is more spotty. If carbon sheets and structurals were available, sales volume would be higher. Many warehouses have improved their position on bars and plates in the broader range of sizes and have inventories in balance on most specialties, floor plates, galvanized sheets, stainless in straight chromium grades, tempered wire and tool steels.

Cincinnati—Warehouse volume appears to be slowing up a little in some instances. Vacations are beginning to have their effect. June business will be off some from that of May. Some distributors, however, report business as brisk as ever, so the situation is somewhat spotty.

Galvanized sheets and alloy steel inventories are adequate. Shortages continue in hot and cold-rolled sheets, structurals, bar size angles, mechanical tubing, large round bars and plates, 3/16 and ¼ inch.

San Francisco—Warehouse steel inventories are building up tonnagewise, but there still is considerable imbalance of stocks. Galvanized products, small size cold-finished bars, wire products and hot-rolled strip are in adequate supply. Bu hot and cold-rolled sheets, struc turals, heavy plates and oil countr goods are among items for whic there is great need for larger sup plies.

Seattle—Distributors are doing normal seasonal business. Followin the recent strike shutdowns, buyin has been brisk. However, there little forward ordering.

Plates are in extremely short sup ply and the July-August outlook of fers no relief.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 144

Seattle — Rolling mill operation continue at capacity. Not many larg projects are pending but volume o orders for small tonnages is substan tial.

Pacific Westbound Conference ha announced a rate of $18 a long to on reinforcing bars from North Pa cific to base ports in Japan, effec tive July and August under specia contract agreement. Additiona charges apply to lengths over 1 feet. This includes shorts and rem nants, angles, plain rounds etc. special pig iron rate of $18 long to from this area to base ports i Japan, Hongkong and Manila is ef fective to Aug. 31.

You Can Get Better, Lower Cost Processing of Stainless Steel—These Three Ways:

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You get more precise heat treating with Houghton Liquid Heats.

Our salt baths devised for stainless steel treatment will preserve the surface. They eliminate danger of inter-granular corrosion, oxidation or other attacks. Heating of parts is uniform and fast.

Houghton salts are carefully compounded to meet predetermined specifications and to remain stable.

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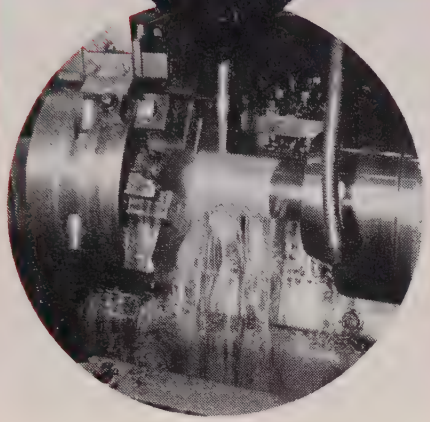
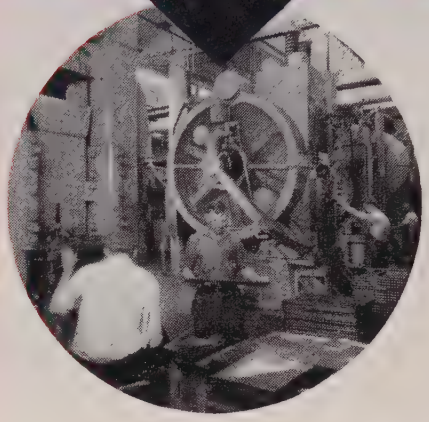


Your machines can turn out better parts, faster, with Houghton Cutting Fluids.

Including highly fortified straight cutting oils for slow speeds, and concentrated bases, both oil- and water-soluble types.

Special emphasis is laid on Antisep All-Purpose Base, used in water emulsions and fortified to provide the lubricity, film strength and anti-welding properties required for machining stainless.

FORMING



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WORTHINGTON WELDING POSITIONER ELIMINATES time-wasting handling of the work-piece . . . increases arc-time by tilting the work into position for continuous, economical downhand welding. Capacities from 100 lbs to 30 tons. Also: Turning Rolls from 3 to 150 tons, stationary and self-propelled.

A way to get more and better welding from your welders

Every minute your welders spend climbing, turning and propping is *lost* welding time.

Turn this waste time into *all arc-time* with Worthington Welding Positioners that tilt or turn all welds into position—*without delay*—for *continuous* downhand automatic or manual welding. Today's labor scarcity makes this increased production more important than ever.

These Positioners lower costs and boost production up to 50%. Downhand welding is *quicker* (only one pass instead of two or three) . . . *better* (deeper penetration with higher current, heavier electrodes, faster deposition of weld metal) . . . *neater* (weld metal levels itself). There's less rod waste, too.

Where can you see a Worthington Welding Positioner at work near you? Just write Worthington Corporation, Plainfield, N. J., for this information or for Bulletin 210D.

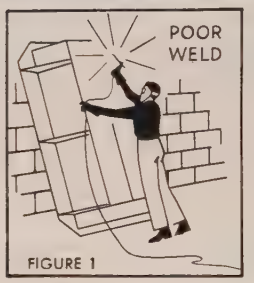
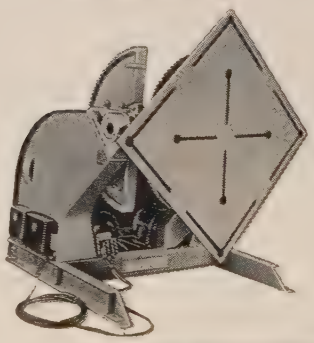


FIGURE 1

FIGURE 2

HOW WORTHINGTON WELDING POSITIONERS PRODUCE BETTER WELDS

When the welder has to climb over, prop or flop the work-piece, he may only be able to use downhand welding over a limited area (Figure 1). With a Worthington Welding Positioner, the work is continually tilted or rotated automatically into position for downhand welding (Figure 2).



WORTHINGTON'S UNIVERSAL TABLE TOP makes the Welding Positioner as profitable on job work as mass production. Those "T" slots make the table adaptable to any shape of work-piece and a wide range of sizes. No special jigs or fixtures needed.

Y.2.3

WORTHINGTON

Welding Positioners
Turning Rolls

Higher Prices Posted on Sheet Steel

Entire market is expected to follow lead of U. S. Steel in making upward revisions on flat-rolled products. Higher cost is not expected to cut demand appreciably

Sheet and Strip Prices, Page 145 & 146

New York—Pressure for hot and cold-rolled carbon sheets continues to top that of all other major steel items in this district. Consumers still turn to warehouses and importers for steel to piece out their needs.

Indications point to little let-up in the near future, and while there will probably be less fabricating once the vacation season is under way next month, domestic producers are confident requirements will exceed their capacity. Actually, some are already talking about a carryover into the fourth quarter, which some will be considering more closely a little later on, once they begin opening books for that period.

On the other hand, there is not quite the interest in conversion steel for fourth quarter that there has been for third quarter. All are keeping a close eye on developments in the automotive field. Any appreciable easing in demand from automobile builders would have quite a bearing on the general picture, it is believed.

Meanwhile, household appliance manufacturers as well as those identified with the automobile industry are pressing for tonnage, almost without exception.

Buffalo—Ten carloads of Belgian steel arrived here for use at the Ford Motor Co. stamping plant. This is reported to be the first time steel of this type has come to Buffalo by water to be delivered to a consumer almost next door to the Bethlehem Steel Co. plant in Lackawanna.

Boston—Heavier deliveries of flat-rolled steel are billed at prices carrying the full impact of higher extras imposed through May. For the first time many consumers are now comprehending their increase in sheet and strip costs. They don't like these higher charges and question their ability to pass on costs where finished products are currently competitive or approaching that point.

Expecting another rise in base prices averaging $4 per ton, most consumers are seriously price-minded for the first time since decontrol.

Philadelphia—Demand for hot and cold-rolled sheets continues strong. While there is not the interest in conversion steel for fourth quarter that there was, there is still pressure for tonnage for shipments throughout the third quarter.

Cleveland—Tight supply conditions in the sheet market, especially hot and cold-rolled, are seen through the remainder of the year. Producers are booked solidly through third quarter and could easily book full for fourth quarter were they disposed to enter tonnage that far ahead. Indications are some makers will open books for fourth quarter within the next couple weeks.

Current demand is highlighted by continued pressure from the automotive industry, which, as yet, shows no sign of slackening its manufacturing pace. At the same time, while over-all demand from the appliance industry is somewhat less pressing the appliance makers are taking every pound made available to them. Demand from this field is particularly heavy from makers of clothes dryers, television sets and air conditioners.

Cincinnati—Demand for sheets and strip has turned a little spotty with a few slight cutbacks. This condition, however, is not expected to have any great effect on the long range picture which looks good through fourth quarter.

A third quarter carry-over of 30 days is anticipated in fourth quarter.

Vacations will be staggered in order to maintain production in the sheet and strip mills.

Chicago—At mill level there is no indication of early shrinking in demand for sheets in any category. Users press intensely for both hot and cold-rolled sheets.

Although galvanized sheets show easiness at warehouses and inventories are increasing, mills find no such condition.

Wire . . .

Wire Prices, Page 146

New York—Revisions on several wire items have been announced by John A. Roebling's Sons Co. (Colorado Fuel & Iron Corp. subsidiary), Trenton, N. J. Base prices as well as extras have been revised, but major effect of the increases is reflected in the extras.

New schedules call for the following on spring steel tempered—.61-.80 carbon max., 11.875c per pound, f.o.b. Trenton; .81-1.05, 14.075c; and 1.06-1.35, 16.925c. Previous addition of $31.50 per ton has been eliminated.

Wire rope—improved plow steel is now 9.50c f.o.b. Roebling, N. J.; and plow steel grade, 9.25c. A.C.S.R. core wire is 9.30c per pound, Roebling; MB spring wire, 6.85c per pound, Roebling; fine and weaving wire, 10.35c, Roebling; tire bead wire, 12.30c, Roebling; cold rolled flat wire, 7.25c, Trenton.

On the establishment of these prices the company no longer adds 4.7 per cent on base and extras.

Boston—Some wire products are sold through third quarter but there are substantial openings for others. Rope wire is slow and rope is available from stock.

Shipments are heavy this month, but will slump in July. Numerous consumers will not take in July shipments because of vacations.

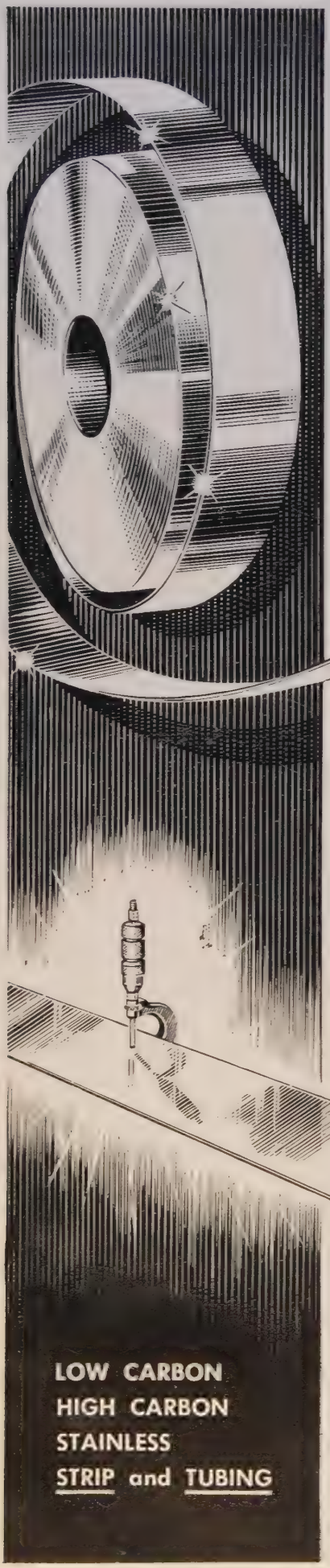
Folsom Dam Gate

This steel structure is a retaining gate for Folsom Dam, Roseville, Calif. It is the first of eight of the huge steel gates to be fabricated at the Maywood, Calif., plant of Consolidated Western Steel Division, U. S. Steel Corp., Pittsburgh. Each gate, over 50 feet high, is fully assembled inspected, dismantled and then shipped

Tubular Goods . . .

Tubular Goods Prices, Page 147

Boston—Buttweld pipe orders from distributors and direct shipments for August are up from the two previous months. The former are restocking after turning down part of the tonnage offered since May. Some building of inventory accounts for the upturn in direct shipments.



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Structural Shapes . . .

Structural Shape Prices, Page 144

Philadelphia—In structurals, some builders are waiting for the price situation in steel to jell before going ahead with plans. Actually, they have not only in mind what is going to happen in steel prices but the effect of the increases on building components and other items that would be required.

Boston — Structural fabricators' backlogs are heavy, extending into next year on girder contracts. Orders have slackened and some larger shops now are shipping more tonnage than they are booking.

Plain structural shapes are tight in all sizes and district shops are forced to pay premiums for fill-in requirements. Some foreign structural steel is being bought.

New York—While there is a fair smattering of private work, including a 1750-ton office building at 5th avenue and 46th street, and a 2000-ton shopping center in White Plains, N. Y., bridge work still dominates the local structural market. Several sizable jobs have been placed and others are actively pending—mostly in connection with New York state thruway work.

Steel Bars . . .

Bar Prices, Page 144

Cleveland—Bar mills are booked solidly through third quarter and the prospects are not promising for any easing in supply conditions before fourth quarter. Producers say they could book tonnage into next year were they so disposed. Consequently, they anticipate no difficulty in filling schedules over remainder of the year even though there should be some slackening in manufacturing industry.

Automotive requirements are pressing and converters are having a time getting all the hot bars they need to meet demands on them for cold-finished.

New York—Second only to that for hot and cold-rolled sheets in intensity, hot carbon bar demand remains active. Producers who have opened books for all of third quarter, and practically all now have, are fully covered for the period. They anticipate an active last half, although admit there may be some tapering in fourth quarter.

Hot alloy bar demand does not appear to be quite as brisk as it was. Tonnage is available for late August and perhaps even better can be done by consumers if disposed to shop around. Cold drawn carbon bar sell-

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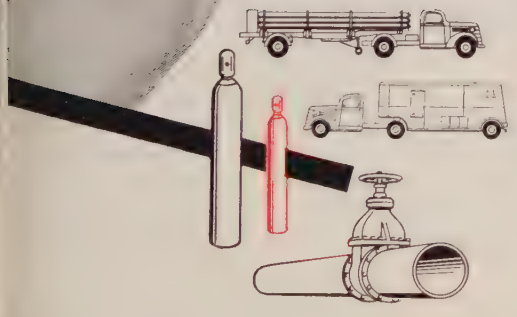

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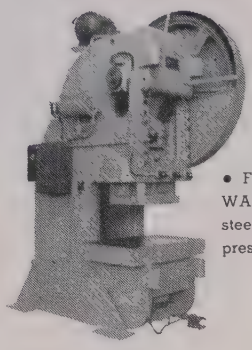
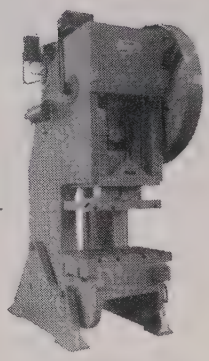
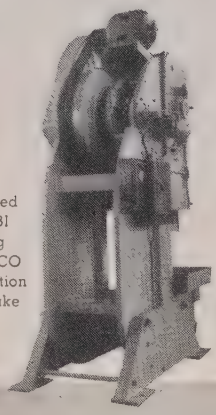
Here's Why Last Year More Press Buyers Bought



• Front view WARCO welded steel frame OBI press.



• Front view WARCO cast steel frame OBI press.



• Rear view WARCO welded steel frame OBI press, showing popular WARCO pneumatic friction clutch and brake unit.

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WARREN, OHIO

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ers are well booked through the third quarter and well into October in some cases. However, an easing in warehouse demand is taking off some of the pressure.

Philadelphia—Hot carbon bar sellers do not expect to open books for fourth quarter for at least another 10 days or more. Most producers believe that with the passing of the Controlled Materials Plan at the end of this month they will be under no obligation to open books for fourth quarter on non-rated carbon tonnage 90 days in advance of the period.

Boston—Alloy bar openings filled for third quarter at less feverish rate than for hot and cold-rolled carbon schedules. Bar inventories are in somewhat better balance with both consumers and warehouses, not only on the smaller, but the medium sizes as well. Heavy flats and rounds are difficult to obtain.

Military requirements are sustained, but defense contracts are frequently placed with deliveries to start against full mill schedules.

Cincinnati—Alloy bars appear in far better supply than they have been at any time in recent months. Warehouses report fairly good inventories in all sizes. On the other hand, carbon bars, particularly in flats and smaller sizes, remain in critical supply. Heavier bars are more plentiful.

Chicago—General weakness in demand for farm implements is reflected in steel bars. This is not causing any over-all easing in pressure because demand from other consuming fields remains strong. The situation might be different were it not for the military shell program.

Plates . . .

Plate Prices, Page 144

Boston—Light gage narrow plates are tightening up as some sheet-strip mills rolling plates have gone back to lighter flat rolled. On the other hand the volume of medium, and, in some cases, heavier plates has improved, although limited tonnage is available for third quarter.

In scattered cases plate shops are slightly less active and requirements are down. Plate fabricators are operating with subnormal stocks, but warehouses have a better range of sizes to meet flame-cutting to shape needs.

Philadelphia—Most plate sellers are booked up for the entire third quarter. Exceptions are those who have not opened their books for the entire three months, on the theory that they would bring their schedules in a little better balance by moving more conservatively.

Prices reduced 15% on Standard Carboloy Tools

STANDARD CARBOLOY TOOLS (right-hand styles not shown): over 15 million of these famous carbide tools — for 80% of all single-point tool applications — have been used by industry. With them, and with the new Carboloy MTI Plan, you can reduce your single-point tool stocks up to *30 per cent or more*. SEND COUPON.

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Large demand and increased production facilities are responsible for the reductions. The new Carboloy plant at Edmore, Michigan, has recently reached full production on these popular tools. In addition, facilities at the main plant in Detroit have been increased.

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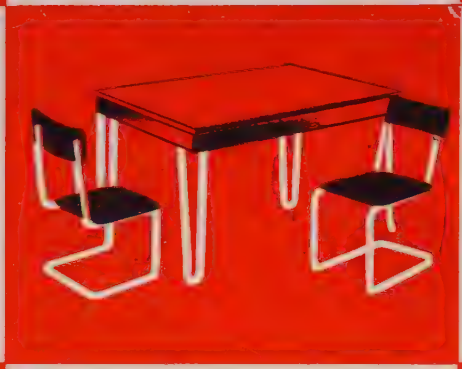

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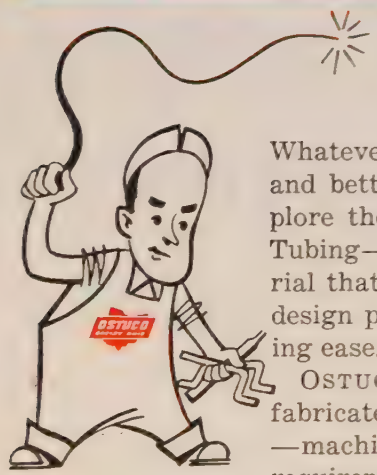

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Conversion Steel . . .

Chicago — Consumers who have been making generous use of conversion steel to augment mill tonnage and thereby increase product output continue to shy away from fourth quarter premium commitments but they are expanding such activity for third quarter.

For some time interest in conversion steel has narrowed down to the automobile industry. Apparently car builders are convinced they will need all the steel they can lay their hands on in the July-September quarter but beyond that they are not so sure. Fourth quarter deals are discussed with steel mills, but the interest appears largely exploratory. Independent car builders show more hesitancy over the future than the big three.

Pig Iron . . .

Pig Iron Prices, Page 140

Cleveland—Spotty foundry operations are reflected in lessened demand pressure on merchant iron sellers but there is no surplus iron yet in evidence here. One of the larger merchant producers reports it is easily disposing of all its output, pressure from the automotive shops offsetting any lag in demand from other consuming quarters.

Foundry iron inventories are limited, an instance of this coming to light last week when a jobbing foundry had to scurry to get in iron to meet melting requirements for a castings order it had just booked.

Producers are in receipt of a few requests for suspension of shipments with vacations getting under way, but in many instances the foundries, especially the automotive shops, will continue to take in iron without interruption.

Philadelphia—German foundry iron is being offered here in cargo lots as low as $53 f. o. b. cars Philadelphia, duty paid. While no sales have been reported, the offering represents a drop of at least $3 or so under the domestic delivered price. The tonnage is for delivery in July and August.

Meanwhile, some small lots of Spanish iron are still being received against old contracts. This iron is intermediate low phos grade and is being consumed by some of the malleable shops in this area. Vacation season is beginning to have an adverse effect on the movement of foundry iron.

Boston—Pig iron shipments are light with melting schedules beginning to fall off for vacation shutdowns. Most foundries have built up

At Portable Electric Tools, Inc., Chicago, costs went down 25% when this Delta air-powered hydraulic drill unit went into production on body housing of PET ¼" portable electric drill.

Portable Electric Tools, Inc.

Cuts Production Costs 25% with

DELTA Air Hydraulic DRILL UNITS

Portable Electric Tools, Inc., of Chicago combined two model 19-150 Delta Air-Powered Hydraulic Drill Units and a standard Delta drill press table to build a simplified, single-purpose production machine. Their aim was to increase unit production and cut operating costs.

The principal operation performed on this machine is the simultaneous boring of two brush holder holes in the PET "Super-Duty" ¼" portable drill body. Exacting accuracy is required because these holes are then used for locating the part for all other machining operations on the aluminum castings.

HERE ARE THE RESULTS:

"The Delta hydraulic drill unit has given us more than 25% production savings," says Walter Sundberg, Superintendent of Production Machining.

Tolerances held are plus .0005 and minus .0000.

Average output per hour, 150 bodies. No mechanical, service or maintenance problems, even when the machine has run three shifts for long periods.

Women workers with no previous experience operate the machine.

WHAT'S YOUR SPECIAL PROBLEM?

Delta air-powered hydraulic drill units can do for you what they've done for Portable Electric Tools, Inc. Your authorized Delta drill unit dealer will show you how to cut costs with this low-priced, high accuracy, high production drill unit. Our Catalog suggests many applications. Use the coupon.

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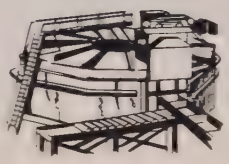
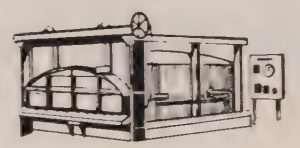
GASMACO INDUSTRIAL FURNACES

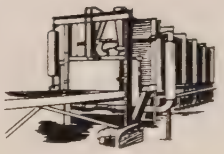
OIL OR GAS FIRED FOR ALL TYPES OF HEAT TREATING

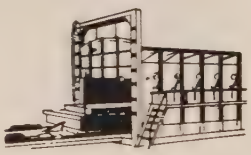
GASMACO furnaces are designed for long, trouble-free service on a wide range of applications. Equipped to handle material of nearly any size or shape, they are ideally suited for forging, heat treating, spheroidizing and annealing.





Exclusive features of GASMACO furnaces are Silicon Carbide Tubes and Rollers which permit operating temperatures up to 2500° F., with fewer replacements. Complete control of the furnace atmosphere is maintained. Annealing is accomplished without decarburization or scale in simple, inexpensive car, pusher, conveyor, chain or roller hearth type furnaces.





All GASMACO furnaces are individually designed to fit your particular furnace requirements and to assure maximum operating economy. It will pay you to investigate these furnaces for your next heat treating job.

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Gas Plant Equipment and Industrial Furnaces

THE GAS MACHINERY CO. (Canada), Ltd.
HAMILTON, ONTARIO

stocks to carry them through July, or will have done so by the end of this month.

Larger consumers are not operating anywhere near capacity, although shops supplying machine tool castings are maintaining the melt fairly well, but below the earlier peak. Several machine tool sub-contracts have expired or have been curtailed. The district blast furnace is starting to pile foundry and malleable grades in slightly heavier volume.

New York—Pig iron sellers are receiving an increasing number of notices from foundries here to hold up shipments during the early part of July as these plants are closing down for mass vacations of one to two weeks.

Buffalo—Automotive demand for merchant pig iron continues heavy. Shipments to nearby and Michigan motor castings shops are active. Easier tendencies are noted among smaller general foundries but the large melters continue to call for heavy tonnage.

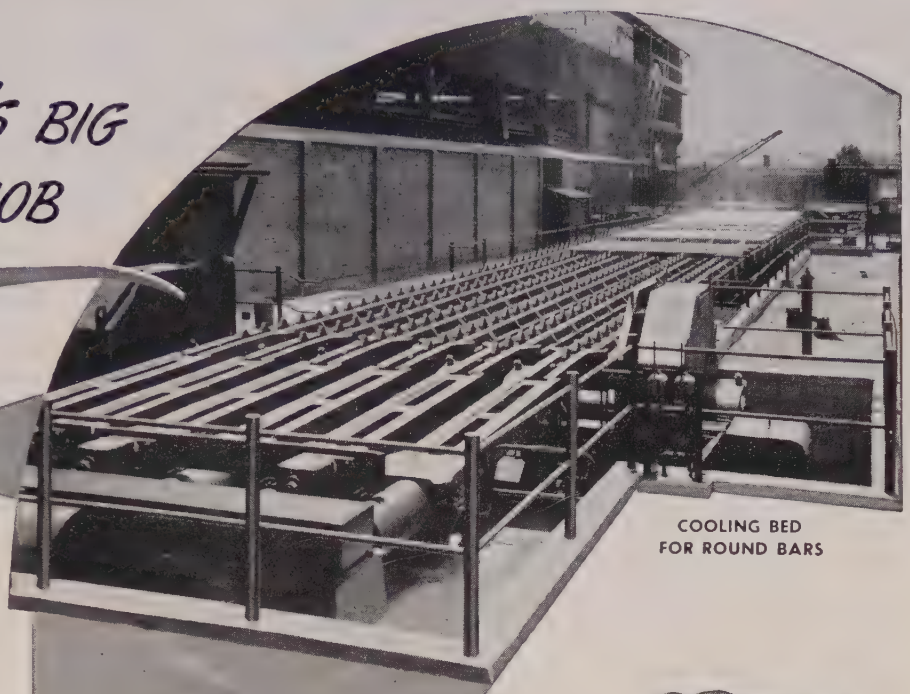
Steel Export Prices Raised

New York — United States Steel Export Co. increased export steel prices effective June 17 in line with the U. S. Steel's changes in domestic prices. The new schedule follows:

Carbon billets, blooms and slabs	
Rerolling quality	$72.00
Forging quality	85.50
Tube rounds	102.50
H.R. Bars	4.77
Skelp	4.37
Shapes	4.70
CB sections	4.70
Bearing piles	4.70
Plates	4.70
Floor plates	5.75
Sheet piling	5.47
Reinforcing bars	4.77
Cold finished bars	5.84
Hot Rolled Sheets	4.68
Cold rolled sheets	5.53
Galvanized sheets	6.13
Vitrenamel sheets	6.03
Electrical sheets, Hot rolled	
Electrical grade	9.12
Hot rolled strip	4.55
Cold rolled strip	6.09
Tight cooperage hoop	4.97
Wire rods	5.03
Bright nail wire	6.12
Black annealed wire	6.87
Galvanized plain wire	7.42
Nails bright	7.25
Staples bright	7.34
Alloy billets, blooms, slabs	$92.00
Alloy hot rolled bars	5.48
Alloy hot rolled bar shapes	5.80
Alloy plates	6.15
Alloy standard shapes	5.60
Alloy hot rolled strip	7.02
Alloy cold finished bars	6.97
High strength plates	6.85
High strength shapes	6.77
High strength CB sections	6.72
High strength hot rolled sheets	6.65
High strength cold rolled sheets	7.93
High strength hot rolled bars	6.83
Manten plates	5.75
Manten shapes	5.65
Manten CB sections	5.70
Manten HR bars	5.55
Manten HR sheets	5.83
AR plates	5.85
AR HR bars	5.90
AR HR sheets	5.83

Y&M makes "what it takes"

FOR INDUSTRY'S BIG PRODUCTION JOB



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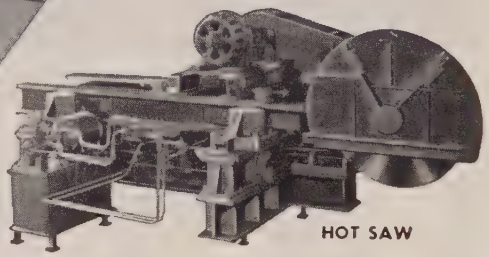
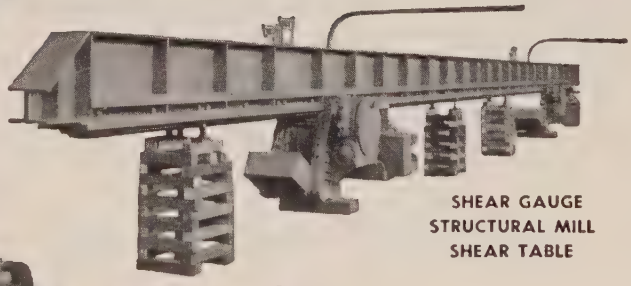
- SHEET SCRUBBER AND CLEANING LINES
- HOT SAWS—ROCKING AND SLIDE TYPES
- HOT BEDS—COOLING BEDS—TRANSFERS
- BILLET EJECTORS—PINCH ROLL STANDS
- SLITTERS—SPECIAL SHEARS AND GAUGES
- TILTING TABLES—TRAVELING AND LIFTING TABLES
- CONTINUOUS PICKLING LINES—ROLLER LEVELLERS
- FURNACE CHARGING EQUIPMENT—FURNACE PUSHERS
- STRIP STEEL COILERS AND REELS—SCRAP BALLERS
- RAILROAD SPIKE FORMING MACHINES—ROLL LATHES
- SHEET GALVANIZING LINES—WIRE PATENTING FRAMES
- STRETCHER LEVELLERS—ANGLE AND SHAPE STRAIGHTENERS
- ROLLING MILL TABLES—GEAR AND INDIVIDUAL MOTOR TYPES
- DUCTILE CASTINGS (80,000 PSI)
- MACHINERY BUILT TO CUSTOMER'S DESIGN AND DETAIL DRAWINGS



HOT SAW



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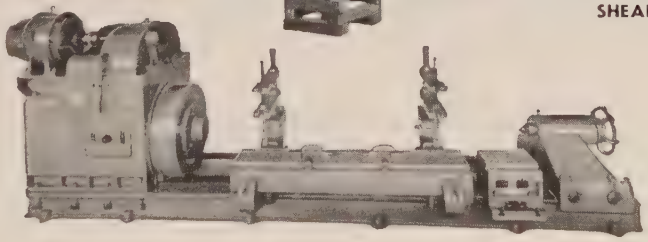
STRUCTURAL MILL
SHEAR TABLE



42" ROLL LATHE

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OVER SIXTY YEARS OF SERVICE TO THE STEEL INDUSTRY

Youngstown, Ohio

5

In the Yard or in the Plant...

EUCLID'S "pace" the Assembly Line

Euclid Cranes prove an important link in the chain of operations required to convert incoming materials into outgoing products in a vast number of manufacturing plants. Facility of movement through ease of precision control enables "Euclids" to handle a large variety of production operations, and to readily "pace" the assembly line. Write us concerning your crane problems. We'll be pleased to submit a proposal.

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LARGE ROUNDS

GREEN RIVER STEEL CORPORATION

OWENSBORO, KENTUCKY

Iron Ore . . .

Iron Ore Prices, Page 165

Cleveland—Lake iron ore shipments in the week ended June 15 totaled 3,273,574 gross tons, according to the Lake Superior Iron Ore Association. This was the second highest weekly tonnage on record, being surpassed only by the 3,384,481 tons shipped in the week ended Sept. 8, 1952.

Shipments in the 1953 season to date now total 28,821,195 tons, up more than 7 million tons compared with the movement in the like period of 1952.

Scrap . . .

Scrap Prices, Page 168

Buffalo—Cast scrap prices plunged an additional $2 per ton as cupola cast fell to $36 to $36.50. Dealers report difficulty finding outlets for cast. Steelmaking grades are steadier as outside buying from the Valley is reported in the midstate area. Dealers are busy shipping against recent orders placed within prevailing price ranges. Water shipments continue heavy with 2000 tons arriving by barge and an additional 6000 tons enroute.

Philadelphia—While the market for steel scrap reflected a stronger tone a few days ago this buoyancy seems to have passed, with prices still unchanged on all the major grades. Somewhat more active buying in western Pennsylvania did not affect this district as much as some had contemplated. However, there is a little more activity here in No. 1 bundles with enough business done to indicate a spread of around $32 to $33, delivered.

Pittsburgh — Small purchases in this district indicate a firming up sentiment in scrap with the majority of grades moving at about $1 per ton higher than last week. Renewed interest seems apparent in open-hearth grades. While no healthy buying is yet apparent, trade interests feel that the market is moving into a more favorable position.

Cleveland—Definitely stronger tone prevails in the scrap market with the threat of a steel strike removed. But the improvement is largely sentimental with the trade still uncertain whether the upturn in the market currently under way is anything more than a "flash-in-the-pan."

An encouraging factor is a pick-up in buying at some points, substantial sale of heavy melting steel being reported at Youngstown a

(*Please Turn to Page* 165)

wire cloth of MONEL or STAINLESS STEEL may be your answer

● Finding the right wire cloth to fit *precisely* the job it has to do in your product, means more than good quality and uniformity . . . more than the right type and size of wire, or mesh, or type of weave. It has to be right metallurgically and chemically . . . to prevent failures . . . to improve your product performance.

Reynolds stainless steel, or Monel metal cloth has a remarkable range of properties, in addition to resisting chemical and atmospheric corrosion. Stainless steel resists oxidation, and oxidizing solutions. It resists many acids; acid and alkaline salts; acetone, ethyl alcohol, benzene, chloroform, etc.

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WORCESTER WIRE WORKS...*Worcester, Mass.*....Round and Shaped Steel Wire, Small Sizes

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Philo or Marietta, O., Lynchburg, Va. Base price: $226, Anaconda, Mont. (Mn 74-76%, C 7% approx.) Base price per net ton $200, Etna, Johnston and Sheridan, Pa.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

(Mn 76-80%) 13.15c per pound of contained Mn, f.o.b. Alloy, W. Va.; Niagara Falls, N. Y.; Ashtabula, O.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn. carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P. 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C. 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max. C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max. Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High - Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr., c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr. 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb of contained Cr. C.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr. 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c; prices on 0.10 per cent carbon grade, C grade, $1.12 per lb of contained chromium. up 4c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l lump bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c Freight allowed. Spot add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 10 lb and over, are as follows: Grade A (14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3½ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx, ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.9[illegible]. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lots 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 10-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

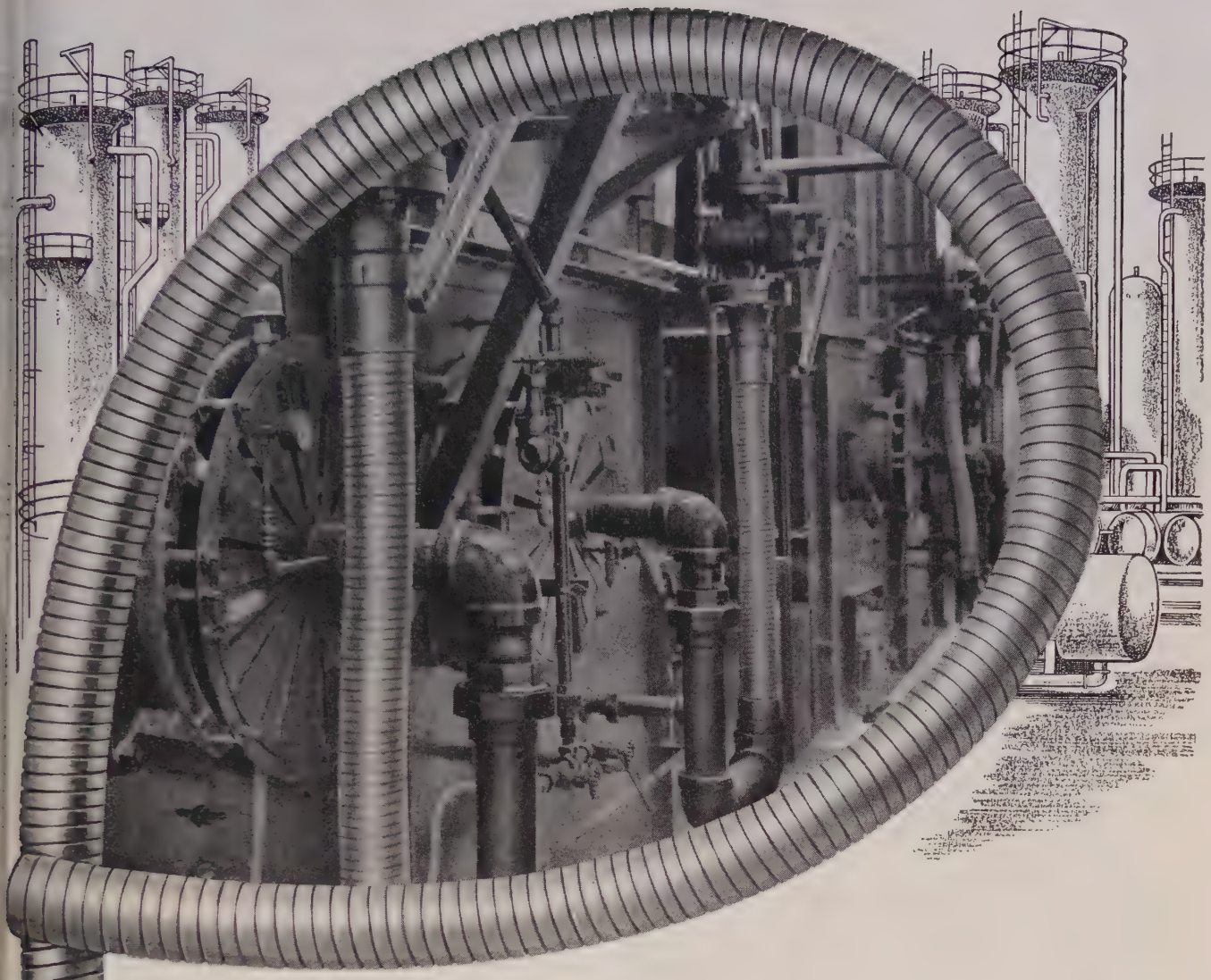
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; balance Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $[illegible] per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.



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Petroleum still burners like this one in Kermit, Texas, put heavy strains on piping. Thermal expansion, contraction and physical shock make safe sealing of burner pipe joint assemblies a vital requirement.

Penflex flexible metal hose with couplings is used on these burners to absorb any pipe movement due to extreme temperature and pressure changes. Lengths of 4" I.D. interlocking, four-wall galvanized steel hose are installed on each burner. Provides outstanding safety and high, uninterrupted flow of volatile fluids. Leakproof, tough and *flexible*.

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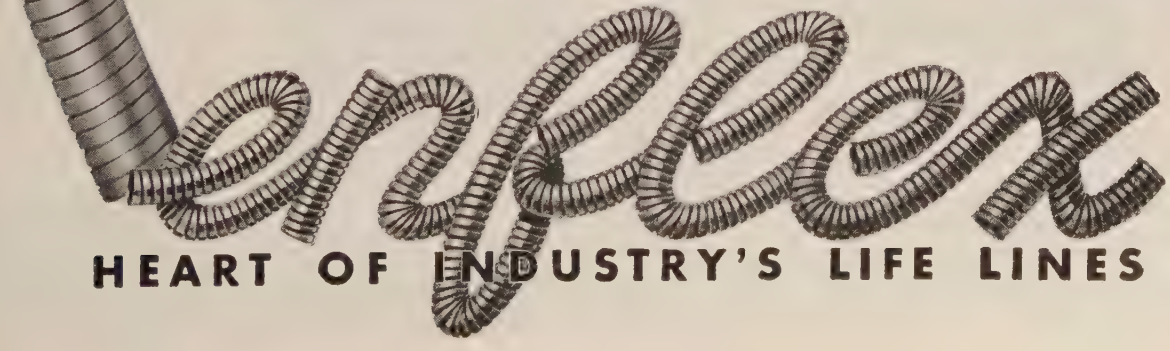
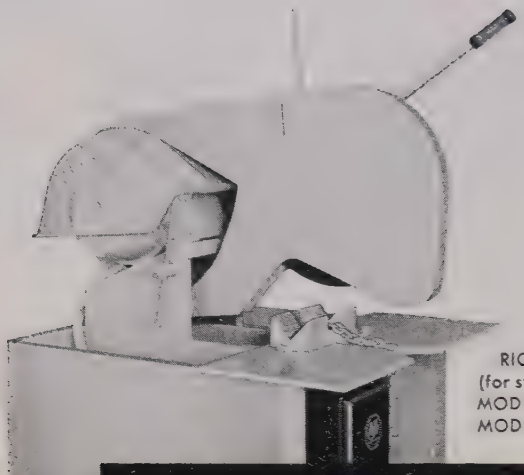


HEART OF INDUSTRY'S LIFE LINES



RIGHT ANGLE
(for straight cuts)
MODEL 75-10 RA
MODEL 10-15 RA

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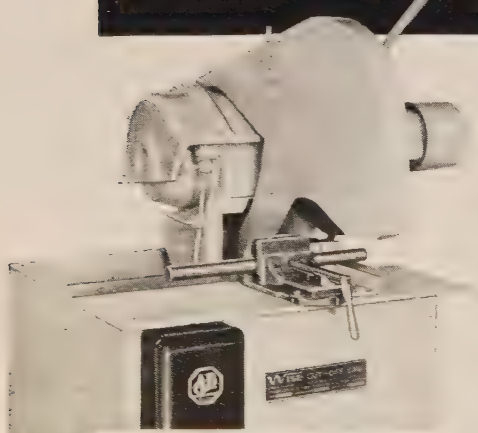

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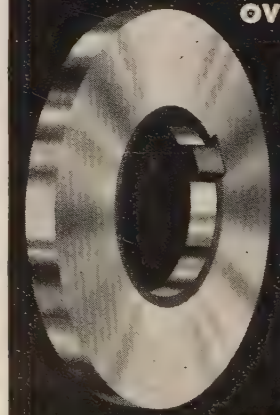

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(*Continued from page* 160)

ground $44. This latter, however, has not been confirmed. Prices on the steelmaking grades are up $1 to $2 per ton with No. 1 heavy melting now quoted $40 to $41 and No. 2 heavy melting $36 to $37.

Boston — Prices have firmed on grades that weakened most initially, No. 2 heavy melting and No. 2 bundles. Steelmaking scrap, while not recovering all the ground lost since decontrol, is steadier. Top grade No. 1 steel scrap is scarce and differentials among various grades are scrambled.

New York—Recent flurry in the Pittsburgh area faded quickly at least insofar as it had any bearing on brokers' buying prices here. Actually, brokers are making the same offerings now as they did a week ago, with no important change in any one grade.

Cincinnati—The scrap market has strengthened during the past week. There is little likelihood of a change in open-hearth grade prices for the rest of the month, however. Borings, turnings and cast grades are less stable but no great fluctuations are anticipated in June.

Detroit—The scrap market here is nearly in balance for the time being, most observers believe. Occasional orders cause some prices to rise but conditions are generally stable.

Chicago—There is a stronger tone in the scrap market here but it originates in dealer-broker transactions rather than in consumers buying. Volume of scrap is running light and brokers are experiencing some difficulty in covering on commitments to mills. Prices from $1 to $3 above the latest consuming prices are reported paid by brokers to fulfill their obligations. With good inventories, consumers are in a position to resist the present upward price surge by remaining out of the market.

Los Angeles—The scrap market exhibits no stability. With mill scrap purchases drastically reduced collections, reduced 50-60 per cent currently, are on the toboggan. Dealers report Kaiser Steel Corp. Fontana Works completely out of the market and Columbia-Geneva Steel Division, U. S. Steel Corp. Torrance plants taking only 50 per cent of usual tonnage.

San Francisco—No. 1 cupola cast was a bit weaker last week. The market fluctuated between $38 and $39 a ton, delivered, compared with the steadier figure of $39 the preceding week. Steel grades are unchanged.

Seattle—With mill inventories at high level and many large buyers out of the market, scrap dealers take a pessimistic view of the outlook. Prices have declined to $26.50 for No. 1 heavy melting, and cast iron is down proportionately. One dealer holds a heavy stock of bundles purchased under government ceiling regulations, on which at today's prices he stands to lose $11 a ton.

Conditions are prompting action to obtain official permission to export. Japan is eager to buy and has been importing iron ore from British Columbia and California for months. Dealers claim supply of scrap justifies an active export movement which would stabilize conditions and clear out surplus lower grades for which there is no domestic demand.

No. 1 heavy melting is reported quoted at $54 to $58 in Japan.

The Pacific West Bound Conference has declared an open rate 90-day period on scrap from this coast to Japan, confined to small pieces not over 30 cu. ft. a ton, meaning that any rate agreed between ship and shipper may be applied. The trial period ends Aug. 31.

Rails, Cars . . .

Track Material Prices, Page 146

New York—Domestic freight car orders are light. In May, according to the American Railway Car Institute and the Association of American Railways, orders involved 1651 freight cars which left the order backlog as of June 1 at 57,345. May deliveries totaled 6582, against 6839 in April, and 6857 in May, 1952.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 147

Cleveland — Industrial fastener makers are working off substantial order backlogs, new business reportedly coming in at a slower pace.

One district producer estimates it has sufficient business on books to support high operations through third quarter, but its backlog is off 35 to 40 per cent from some months back. At the same time competition for orders is increasing in intensity, and reports of price shading are more frequently heard.

This latter situation has producers worried with another steel price increase on the way. The recent advances in steel mill extra charges were absorbed by the fastener makers, but it will be difficult for them to absorb another $4 to $5 per ton increase in base prices. However, with buyers doing more shopping around and price cutting in evidence, some makers anticipate difficulty in

(*Please turn to page* 170)

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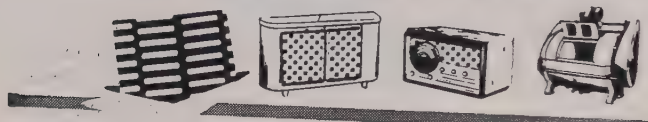

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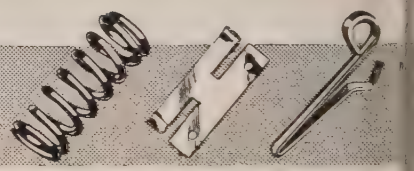

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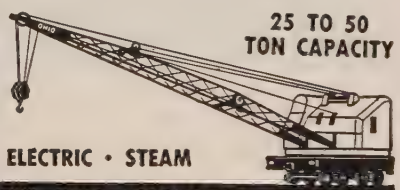

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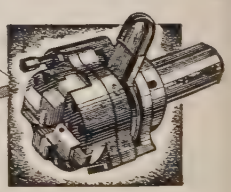

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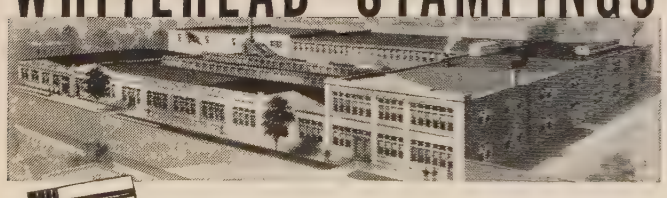

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ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in Italic.

ORES

Lake Superior Iron Ore

(Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Old range bessemer	$10.10
Old range nonbessemer	9.95
Mesabi bessemer	9.85
Mesabi nonbessemer	9.70
Open-hearth lump	10.95
High phosphorus	9.70

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematites (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$55.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $99.30; Salina, Pa., $104.55; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $99.30; Hays, Pa., $105.10; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $109.70; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $179.55; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $69.30; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $92.40; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $127; Johnstown, Pa., $127.30; Clearfield, Pa., $135; St. Louis, $138; Athens, Tex., $140.90.

Nozzles

Reesdale, Pa., $203.20; Johnstown, Pa., $208.40; Clearfield, Pa., $219.45; St. Louis, $224.65; Athens, Tex., $225.20.

Runners

Reesdale, Pa., $158.20; Johnstown, Pa., $161.70; Clearfield, Pa., $168.60; St. Louis, $170.30; Athens, Tex., $174.40.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $166.30; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $210.20; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $244.85; Danville, Ill., $247.85; Clearfield, Pa., $252.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connelsville, foundry	16.50-17.00
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar, Tex. ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	**23.75**
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums)	17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $35-$36.

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

June 18	$39.83
June 11	39.50
May avg.	39.17
June 1952	42.63
June 1948	40.67

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*40.00-41.00*
No. 2 heavy melting	*35.00-36.00*
No. 1 bundles	*40.00-41.00*
No. 2 bundles	*34.00-35.00*
No. 1 busheling	*40.00-41.00*
Machine shop turnings	*26.00-27.00*
Mixed borings, turnings	*26.00-27.00*
Short shovel turnings	*31.00-32.00*
Cast iron borings	29.00-30.00
Cut structurals	*48.00-49.00*
Heavy turnings	39.00-40.00
Punchings & plate scrap	*48.00-49.00*
Electric furnace bundles	44.00-45.00

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Charging box cast	*42.00-43.00*
Heavy breakable cast	37.00-38.00
Unstripped motor block	35.00-36.00
No. 1 machinery cast	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt	46.00-47.00
Rails, 2-ft. and under	51.00-52.00
Rails, 18-in. and under	*52.00-53.00*
Rails, random lengths	47.00-48.00
Railroad specialties	51.00-52.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*40.00-41.00*
No. 2 heavy melting	*36.00-37.00*
No. 1 bundles	*40.00-41.00*
No. 2 bundles	*35.00-36.00*
No. 1 busheling	*40.00-41.00*
Machine shop turnings	*23.00-24.00*
Mixed borings, turnings	*27.00-28.00*
Short shovel turnings	*27.00-28.00*
Cast iron borings	*27.00-28.00*
Low phos.	*45.00-46.00*
Alloy free, short shovel turnings	30.00-31.00
Electric furnace bundles	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	43.50-44.00
Charging box cast	42.00-43.00
Stove plate	42.00-43.00
Heavy breakable cast	37.00-38.00
Unstripped motor blocks	27.00-28.00
Brake shoes	36.00-37.00
Clean auto cast	45.00-46.00
No. 1 wheels	40.00-41.00
Burnt cast	35.00-36.00
Drop broken machinery	43.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R.R. Malleable	49.00-50.00
Rails, 3-ft. and under	52.00-53.00
Rails, 18-in. and under	55.00-56.00
Rails, random lengths.	48.00-49.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	49.00-50.00
Angles, splice bars	52.00-53.00
Rails, rerolling	53.00-54.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	*37.00-38.00*
No. 1 bundles	*42.00-43.00*
No. 2 bundles	*36.00-37.00*
Machine shop turnings	*24.00-25.00*
Short shovel turnings	*28.00-29.00*
Cast iron borings	*28.00-29.00*
Low phos.	*43.00-44.00*
Electric furnace bundles	*43.00-44.00*

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	41.00-42.00
No. 2 heavy melting	37.00-38.00
No. 1 bundles	41.00-42.00
No. 2 bundles	Nominal
No. 1 busheling	41.00-42.00
Machine shop turnings.	27.00-28.00
Mixed borings, turnings	32.00
Short shovel turnings	33.00
Structurals & Plate	45.00-46.00
Heavy turnings	39.50-40.50
Couplers, springs, wheels	50.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	40.00
Heavy breakable cast	43.00
Unstripped motor blocks	29.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	29.00-30.00
No. 2 bundles	Nominal
Machine shop turnings.	17.00-19.00
Mixed borings, short turnings	22.00-23.00
Low phos. (structural & plate)	37.00-38.00
Shovel turnings	22.50-23.50

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	22.50-23.00

DETROIT

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	*28.00-29.00*
No. 1 bundles	37.00-38.00
No. 2 bundles	*25.00-26.00*
No. 1 busheling	36.50-37.50
Machine shop turnings	*15.00-16.00*
Mixed borings, turnings	*15.00-16.00*
Short shovel turnings	18.00-19.00
Punchings & plate scrap	40.00-41.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	35.00-36.00
Stove plate	35.00-36.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Delivered consumer plant)

No. 1 heavy melting	41.00
No. 2 heavy melting	37.00
No. 1 bundles	41.00
No. 2 bundles	34.00
No. 1 busheling	41.00
Machine shop turnings.	21.00
Mixed borings, turnings	23.00*
Short shovel turnings	25.00*
Cast iron borings	23.00*

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	38.00
Stove plate	28.00*
Burnt cast	28.00*
Heavy breakable cast	37.00*
Unstripped motor blocks	30.00
Brake shoes	29.00*
Clean auto cast	38.00
Drop broken machinery	48.00

Railroad Scrap

No. 1 R.R. heavy melt	*44.00*
Malleable	45.00
Rails, 18-in. and under	53.00
Rails, random lengths	45.00

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting	37.00-38.00
No. 2 heavy melting	*35.00-36.00*
No. 1 factory bundles	40.00-41.00
No. 1 dealer bundles	37.00-38.00
No. 2 bundles	*32.00-33.00*
No. 1 busheling	37.00-38.00
Machine shop turnings.	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	22.00-23.00
Cast iron borings	*22.00-23.00*
Cut structurals	*41.00-42.00*
Punchings & plate scrap	41.00-42.00
Electric furnace bundles	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	*38.00-40.00*
Stove plate	32.00-34.00
Unstripped motor blocks	35.00-37.00
Clean auto cast	40.00-42.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt	40.00-41.00
R.R. Malleable	39.00-41.00
Rails, 2-ft. and under	*50.00-51.00*
Rails, 18-in. and under	*52.00-53.00*
Angles, splice bars	*46.00-48.00*
Rails, rerolling	47.00-48.00

BIRMINGHAM

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	*29.00-30.00*
Machine shop turnings.	20.75-21.75
Short shovel turnings	22.75-23.75
Cast Iron borings	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	*39.00-40.00*
Charging box cast	30.00-31.00
Stove plate	*35.00-36.00*
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2-ft. and under.	45.00-46.00
Rails, random lengths.	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	33.00-34.00
No. 1 bundles	34.00
No. 2 bundles	31.00-32.00
Machine shop turnings.	17.00-18.00
Short shovel turnings	20.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Unstripped motor blocks	33.00-34.00
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	33.00-34.00

Railroad Scrap

Malleable	36.00
Rails, 18-in. and under	53.00-54.00
Rails, random lengths.	39.00-40.00
Uncut tires	44.00
Angles, splice bars	45.00-46.00
Rails, rerolling	48.00-49.00

BUFFALO

No. 1 heavy melting	40.50-41.00
No. 2 heavy melting	38.00-38.50
No. 2 bundles	36.00-36.50
No. 1 bundles	40.50-41.00
No. 2 busheling	40.50-41.00
Machine shop turnings.	23.50-24.00
Mixed borings, turnings	29.00-29.50
Short shovel turnings	29.50-30.50
Cast iron borings	29.00-29.50
Low phos.	44.50-45.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	*36.00-36.50*
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths.	45.75-46.75
Rails, 2 ft. and under.	51.75-52.75

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	*26.50-27.00*
No. 1 bundles	33.00-34.00
No. 2 bundles	*25.00-26.00*
Machine shop turnings.	17.00-17.50
Mixed borings, turnings	19.00-20.00
Short shovel turnings	21.00-21.50
No. 1 cast	32.00-34.00
Mixed cupola cast	26.00-28.00
No. 1 machinery cast	*36.00-38.00*

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	31.00
No. 2 heavy melting	27.00
No. 1 bundles	30.00
No. 2 bundles	24.00
No. 3 bundles	20.00
Machine shop turnings.	15.00
Mixed borings, turnings	15.00
Short shovel turnings	15.00
Electric furnace, No. 1.	38.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00
Heavy breakable cast	36.00-38.00
Unstripped motor blocks	29.00
No. 1 wheels	38.00-40.00

Railroad Scrap

Rails, random lengths.	38.00

SAN FRANCISCO

No. 1 heavy melting	28.00
No. 2 heavy melting	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings.	10.00
Mixed borings, turnings	29.00
Short shovel turnings	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.00
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft, and under.	42.00
Rails, 18-in. and under.	45.00
Rails, random lengths.	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting	20.00
No. 1 bundles	24.00
No. 2 bundles	20.00
Machine shop turnings	8.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00-43.00

HAMILTON, ONT.

(Delivered Prices)

Heavy melting	$32.00
No. 1 bundles	32.00
No. 2 bundles	32.00
Mechanical bundles	28.00
Mixed steel scrap	28.00
Mixed borings, turnings	26.00
Rails, remelting	32.00
Rails, rerolling	41.50
Busheling	26.00
Busheling new factory:	
Prep'd	30.00
Unprep'd	28.00
Short steel turnings	26.00

Cast Iron Grades

No. 1 machinery cast	50.00

† F.o.b., shipping point.

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

(*Continued from page* 165)

marking up their prices unless order volume markedly rises.

Currently, automotive demand for fasteners is providing strong support but other consuming avenues are becoming noticeably cautious.

Ferroalloys . . .

Ferroalloy Prices, Page 162

New York—Electro Metallurgical Co., division of Union Carbide & Carbon Corp., has announced a new base price of 13.15 cents per pound of contained manganese, f.o.b. shipping point, for standard ferromanganese containing 76 to 80 per cent manganese. This new price reflects a slight increase and is effective June 15 on a spot basis and July 1 for contract users.

The new price involves a change in quoting to a per pound of contained manganese basis. This change is consistent with the company's pricing of practically all other ferroalloys containing a single element other than iron. A reduction in the manganese range from 78-82 per cent to 76-80 per cent, also effected, is said to be necessitated by the lower average quality of available manganese ores.

According to the company, the manganese content of its standard ferromanganese may not be materially changed from the level of recent months, at least for the time being. At the same time, it states, some upward revisions in the prices of a few highly specialized alloys are being put into effect to compensate for higher costs resulting from increased cost of special raw materials required in their production.

New York—The Vanadium Corp. of America has reduced prices on Graphidox No. 4 a half cent to 17.5 cents per pound of alloy, packed in carlots, 18.5 cents in ton lots and 20 cents in less than ton lots—all f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

10,115 tons, state bridges, Ohio State Turnpike, Lorain, Erie and Sandusky counties, Ohio, to Bethlehem Steel Co., Bethlehem, Pa., direct through Ohio Turnpike Commission, Columbus, O.

2115 tons, research laboratory, Westinghouse Electric Corp., Churchill Borough, Pa., through Starrett Bros. & Eken, New York city, to Ingalls Iron Works, Birmingham.

2000 tons, two buildings, Cross County Shopping Center, White Plains, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

2000 tons, central repair shops, Marine Corps depot, Albany, Ga., to Hartley Boiler Works, Montgomery, Ala.; Batson-Cook Co., West Point, Ga., general contractor.

1800 tons, boiler supports, Morro Bay, Calif., Combustion Engineering-Superheater Corp., New York, to Consolidated Western Steel Division, United States Steel Corp., Los Angeles.

1750 tons, office, Psaty & Fuhrman, 5th Ave. and 46th St., New York, to Schacht Steel Construction, Inc., that city.

1190 tons, highway bridge, Bronx county, New York, through Charles F. Vachres Inc., to Lehigh Structural Steel Co., Allentown, Pa.

1050 tons, tube mill, Bridgeport Brass Co., Bridgeport, Conn., to Haarmann Structural Steel Co., Holyoke, Mass., through H. K. Ferguson Co., New York, general contractor.

1000 tons, structurals and bars, women's dormitory, Ohio State University, Columbus, O., to the J. T. Edwards Co., Columbus, structurals, and the Pollak Steel Co., Cincinnati, reinforcing, through James I. Barnes Construction Co., Springfield, O., general contractor.

730 tons, electronics shop, naval shipyard, Boston, to American Bridge Division, United States Steel Corp., Pittsburgh; S. & A. Allen Construction Co., Boston, general contractor.

640 tons, state highway bridges, Windsor-Hartford, Conn., to Phoenix Bridge Co., Phoenixville, Pa.; Brunalli Construction Co., Southington, Conn., general contractor.

600 tons, boiler supports, Salt Lake City, Utah, Combustion Engineering-Superheater Corp., New York, to the Maxwell Steel Co.

500 tons, structurals and bars, senior high school, Natick, Mass., to West End Iron Works Cambridge, Mass., structurals; and United States Steel Supply Division, United States Steel Corp., Cambridge, reinforcing through B. Perini & Sons Inc., Framingham, Mass., general contractor.

500 tons, estimated, structurals and bars, chemistry-physiology building, University of Tennessee medical school, Memphis, to Decatur Iron Works, Decatur, Ala., (structurals), and Jones & Laughlin Steel Corp. (bars); Harmon Construction Co., Oklahoma City, Okla., general contractor.

500 tons, boiler supports, Red Rock, Ariz., Combustion Engineering-Superheater Corp., to Austin Bros., Dallas, Tex.

450 tons, structurals, bars and miscellaneous iron, Wakefield school, Arlington, Va., to Barber & Ross Co., Washington (structurals), Ceco Erection Co., Washington, (reinforcing), and Washington Stair & Ornamental Iron Works, (miscellaneous iron); Iron & Reynolds, Inc., Washington, general contractor.

360 tons, warehouse and office, Fisher Bros., Steel Corp., Englewood, N. J., to Bergen Point Iron Works, Bayonne, N. J.

325 tons, power station, Mandan, N. D., for Ebasco Services, New York, to Warden Allen, Chicago.

300 tons, galvanized fabricated structural steel

Steel Continues Record Production Through May

STEEL PRODUCTION continues to set its monthly records with 9,998,000 net tons for ingots and steel castings in May, second highest monthly output on record and highest ever for the month.

Surpassed only by the 10,168,098 tons in March, the May figure brings the five-month total up to 48,542,377 tons, an 11.9 per cent increase over the same period last year.

Big Difference — Production last month, which was nearly half-a-million tons greater than in April, was about 1.8 million tons greater than in May, 1952. Main reason for the wide gap was the walkout in late April-early May last year in the midst of the seizure of the steel industry by the government.

The American Iron & Steel Institute monthly report puts rate of production at 100.1 per cent of capacity for May.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly	No. of weeks
	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	production (net tons)	in mos.
1953										
January	8,841,679	101.4	350,000	88.9	706,083	81.2	9,897,962	99.1	2,234,303	4.43
February	7,939,299	100.8	329,389	92.6	664,091	84.6	8,932,779	99.1	2,233,195	4.00
March	9,050,773	103.7	354,710	90.0	762,615	87.7	10,168,098	101.8	2,295,282	4.43
1st Qtr.	25,831,751	102.0	1,034,299	90.4	2,132,789	84.5	28,998,839	100.0	2,254,964	12.86
*April	8,493,909	100.5	334,605	87.7	717,024	85.2	9,545,538	98.7	2,225,067	4.29
†May	8,926,000	102.3	355,000	90.1	717,000	82.5	9,998,000	100.1	2,257,000	4.43
1952										
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,824,524	89.1	27,200,724	100.7	2,092,363	13.00
April	7,101,199	91.1	323,006	73.2	567,935	84.1	7,992,140	89.7	1,862,970	4.29
May	7,291,865	90.6	318,642	69.9	595,135	85.3	8,205,642	89.2	1,852,289	4.43

Note—The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open-hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953, as follows: Open-hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,490 net tons, total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings, total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

*Revised.
†Preliminary figures, subject to revision.

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SALES ENGINEER

Experienced salesman with engineering background, familiar with mechanical power drives, to represent a well established Detroit universal joint manufacturer. Would contact present customers and solicit new accounts, working out of Detroit headquarters.

Excellent earnings opportunity. Replies held in strict confidence. Give qualifications, references, extent of experience, etc. Reply Box 749, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT MANAGER for STRUCTURAL STEEL FABRICATING PLANT

A-A-A-1 company wants experienced Plant Manager to take charge of structural steel fabricating plant. Plant has 2500-3000 ton monthly capacity. Located in Midwest. Applicant must be completely familiar with all phases of structural steel fabrication for heavy bridges and building fabrication. This is a once-in-a-lifetime opportunity for the right person who possesses necessary experience, executive ability, and technical knowledge. Write full details, including age, education, and experience. Salary open.

Reply Box 748, STEEL

Penton Bldg., Cleveland 13, Ohio

FOR SALE

(3) 25 Ton HENRY & WRIGHT DIEING PRESSES 1½" Strokes—With Double Roll Feeds. One with Scrap Cutter.
BLISS HIGH PROD. PRESSES
#630 45 Ton and #650 75 Ton 1" Strokes With Double Roll Feed & Scrap Cutters. LATE TYPE.
(Send for list of other Presses & Metal Working Mach.)
SEABOARD STEEL CO., New Haven, Conn.

FOR SALE

1—#6 HILLES & JONES VERTICAL OPEN SIDE BAR SHEAR, CAPACITY 3½" ROUNDS, INCLUDING 15 HP, 230 VOLT D.C. MOTOR. EST. WT. 50,000 LBS.

FRANK B. FOSTER, INC.
2220 Oliver Building Pittsburgh 22, Pa.
Cable Address: "Foster Pittsburgh"

STAINLESS STEEL FOR SALE

Approximately 10 tons of miscellaneous size sheets of Type 18-8, 302 and 304 stainless steel sheets, 10, 14 and 16 gauge, 2-B and #4 finish.

Contact

Girton Mfg. Co. Millville, Penna.

MANUFACTURERS REPRESENTATIVE

Actively engaged in Maryland, Virginia and North Carolina since 1946, now doing over $400,000 annually for one account, calling on Metal & Chemical Processing Industries desires one additional line. Established and financially responsible. Write Box 756, STEEL, Penton Bldg., Cleveland 13, Ohio.

MANUFACTURER'S REPRESENTATIVE

Experienced and successful agent or organization with mechanical engineering background wanted to represent nationally known 56-year old manufacturer of blast cleaning equipment, dust collecting systems, and foundry supplies. Several territories open. Write in confidence giving full details on experience and lines currently represented.

Write Box 757, STEEL

Penton Bldg., Cleveland 13, Ohio

an ACCO product WIRE

ROUND
FLAT
OR
SHAPED

PAGE
makes them all...

LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

YOU draw the Shape
—Page can draw the Wire

Tell us the way *you* want it. We'll follow *your* specifications.

Cross-sectional areas up to .250" square; widths up to ⅜"; width-to-thickness ratio not to exceed 6 to 1.

Wire or Write Today

PAGE WIRE

ACCO

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

Kingston steam plant, Tennessee Valley Authority, Knoxville, Tenn.

265 tons, municipal sanitation garage, New York, through Ranes Construction Co., to J. & B. Iron Works, that city.

260 tons, central heating plant, air field base, Dover, N. J., to City Iron Works, Hartford, Conn., through Frederick Raff Co., Hartford, general contractor; also 65 tons, reinforcing, to Concrete Steel Co., New York.

225 tons, state highway bridge, Rumford, Me., to Bethlehem Steel Co., Bethlehem, Pa.; W. H. Hinman, Inc., North Anson, Me., general contractor; reinforcing bars to Bancroft & Martin Rolling Mills, Inc., South Portland, Me.

190 tons, building, Washington, D. C., through Lysett Inc., to Bethlehem Steel Co., Bethlehem, Pa.

180 tons, distributing building, Western Electric Co., Milwaukee, to American Bridge Division, United States Steel Corp., Pittsburgh.

125 tons, industrial building, Little Falls, N. J., through Purdy & Henderson Associates, to Jones & Laughlin Steel Corp., Pittsburgh.

125 tons, state bridge, Oneida county, New York, to Ernst Iron Works, Buffalo.

100 tons, trestle, Florida East Coast railroad, St. Augustine, Fla., to Decatur Iron & Steel Co., Decatur, Ala.

STRUCTURAL STEEL PENDING

5525 tons, state thruway, Oneida county, New York; D. W. Winkleman, Syracuse, N. Y., low on general contract.

5000 tons, state thruway, Herkimer county, New York; DeFelice & Son, New Haven, Conn., low on general contract.

4500 tons, municipal hospital, Newark, N. J., all bids rejected following a change in political administration; new bids, it is believed, will eventually be asked although no date has been set.

1360 tons, state thruway, Rockland county, New York; DeFelice & Son, New Haven, Conn., low on general contract.

370 tons, viaduct connection, Borough of Manhattan, New York, bids closed.

330 tons, state highway bridge, Erving-Montague, Mass.; Daniel O'Connell & Sons, Inc., Holyoke, Mass., low on general contract.

200 tons, building, Amalgamated Laundry Workers clinic, 222 East 34th street, New York, A. J. Courtnel low on general contract.

150 tons, state bridge, Dauphin county, Pennsylvania, bids July 10.

100 tons plus, Ketchikan, Alaska, high school; Carson Constsruction Co., Helena, Mont., low $2,780,770.

100 tons, manlift structure; Pacific Car & Foundry Co., Seattle, low $29,880 to Seattle Light Department.

Unstated, six sections, transportation facility shops; bids to Atomic Energy Commission, Richland, Wash., June 23.

Unstated, two warehouses, McChord Field, Washington; John H. Sellen Construction Co., Seattle, low $360,995, to U. S. Engineer, Seattle.

Unstated, Richardson highway, Alaska, 2 bridges; Lloyd W. Martin, Fairbanks, low $106,566, to Alaska Road Commission.

Unstated, aircraft maintenance shop, Eielson Field, Alaska; S. S. Mullen, Inc., Seattle, low base $671,435, to U. S. Engineer.

Unstated, addition and repairs, heating plant, Ladd Field, Alaska, fire-damaged; bids to U. S. Engineer, June 26.

Unstated, steel frame addition reactor service building; bids to Atomic Energy Commission, Idaho Falls, Ida., June 24.

REINFORCING BARS . . .

REINFORCING BARS PLACED

305 tons, state bridges, Windsor-Hartford, Conn., to Plantations Steel Co., Providence, R. I.; Brunalli Construction Co., Southington, Conn., general contractor.

130 tons, central repair shops, Marine Corps depot, Albany, Ga., to Ceco Steel Products Co., Atlanta, Ga.; Batson-Cook Co., West Point, Ga., general contractor.

115 tons, police administration and court building, Hartford, Conn., to Scherer Steel Co., Hartford, Conn., Southern New England Construction Co., Hartford, general contractor.

100 tons, including miscellaneous and 45 tons reinforcing, Burlington, Wash., school, to Northwest Steel Rolling Mills, Inc., Seattle.

REINFORCING BARS PENDING

2300 tons, disposal tanks, Hanford Works; Grove, Shepherd, Wilson & Kruge, Seattle, low $2,428,468 to Atomic Energy Commission.

1000 tons, Chandler pumping plants, Columbia Basin project; A. J. Cheff Construction Co., Seattle, low $1,963,084 to Bureau of Reclamation, involving concrete penstock and discharge lines; Lee Hoffman, Beaverton, Oreg., low $1,979,903 specifying steel plate.

800 tons, 1½ million bushel addition to Spokane, Portland & Seattle railroad grain elevator, Port of Vancouver, Wash., (involving 3600 pilings) general contract to Henry George & Sons, Spokane, Wash.; $1.8 million project.

400 tons, Garden State Parkway, contract No. 65, section 8, Ocean county, New Jersey, bids July 6.

395 tons, Garden State Parkway, contract No. 24, section 7, Monmouth county, New Jersey, bids June 18.

175 tons, laterals, etc., Potholes East Canal, Columbia Basin project; also 26,120 ft. 12 to 54-in. concrete pipe, five pump units; bids to Bureau of Reclamation, Ephrata, Wash., July 7.

Unstated, 21 ammunition storage igloos, Ladd Field, Alaska; bids to U. S. engineer, Seattle, July 15.

Unstated, 600,000-gal. concrete reservoir; Great Falls, Mont.; Lease & Leigland, Seattle, low $118,920 to U. S. Engineer, Seattle.

Unstated, concrete water pipe, Clackamas, Oregon; general contract to American Pipe & Construction Co., Portland, Oreg.; $96.-415.

PLATES . . .

PLATES PLACED

Unstated, municipal water system, Clackamas, Oreg.; partial award for steel pipe to Beall Pipe & Tank Co., Portland, $65,911.

PLATES PENDING

1700 tons, disposal tanks, Hanford Works; Grove, Shepherd, Wilson & Kruge, Seattle, low to Atomic Energy Commission.

215 tons, new or used steel piling; bids to Centralia, Wash., July 12.

125 tons, fuel tanks, Great Falls, Mont., air base; Chicago Bridge & Iron Co., Seattle low to U. S. Engineer.

PIPE . . .

CAST IRON PIPE PLACED

1000 tons, 12 to 4 in., system expansion Clackamas, Oreg., to Hugh G. Purcell, Seattle, for U. S. Pipe & Foundry Co., Burlington, N. J.

330 tons, 12 to 6 in., Enumclaw, Wash. water system, to Hugh G. Purcell, Seattle.

300 tons, 12 to 4 in., District No. 20, Seattle to Pacific States Cast Iron Pipe Co., Seattle.

200 tons, 10 and 12-inch, New Bedford, Mass. to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, system expansion, Friday Harbor, Wash., to Hugh G. Purcell, Seattle.

CAST IRON PIPE PENDING

530 tons, eight and 12-inch, Boston; bids in

300 tons, eight-inch, Springfield, Mass.; bids in.

200 tons, 16 and 20-inch, Logan Air Field Boston; contractor's letting.

100 tons plus, contractor's job; bids in to Tacoma, June 15.

Unstated, 11,350 ft. 8 and 6 in. and accessories, Larson Air Base, Washington state; bids to U. S. Engineer, Walla Walla, July 1

STEEL PIPE PLACED

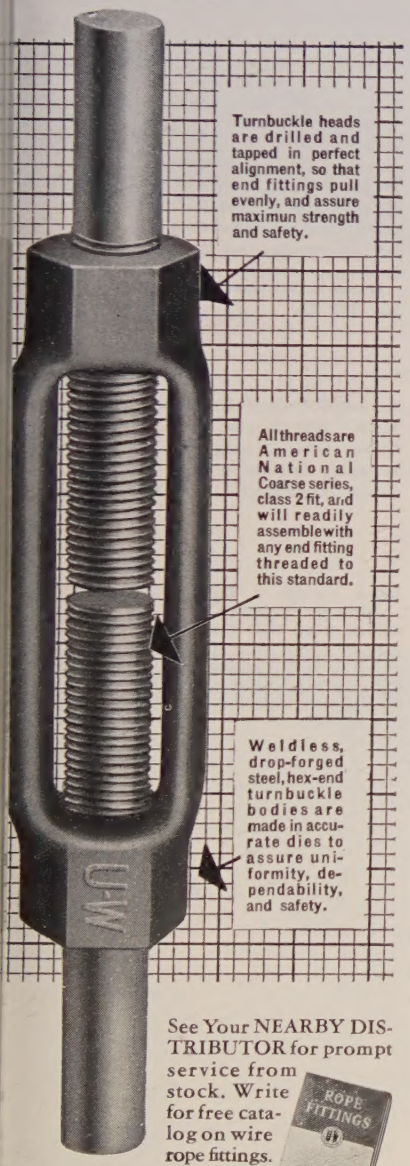
300 tons, heating distributing system, air field base, Dover, N. J., to Bethlehem Steel Co., Bethlehem, Pa., and A. M. Byers Co., Pittsburgh, through Frederick Raff Co., Hartford, Conn.

STEEL PIPE PENDING

Unstated, 10,000 ft. 6 inch, galvanized steel and fittings; bids to U. S. Engineer, Walla Walla, Wash., June 24.

UPSON-WALTON turnbuckles

ENGINEERED FOR SAFETY


Turnbuckle heads are drilled and tapped in perfect alignment, so that end fittings pull evenly, and assure maximun strength and safety.
All threads are American National Coarse series, class 2 fit, and will readily assemble with any end fitting threaded to this standard.
Weldless, drop-forged steel, hex-end turnbuckle bodies are made in accurate dies to assure uniformity, dependability, and safety.
U-W

See Your NEARBY DISTRIBUTOR for prompt service from stock. Write for free catalog on wire rope fittings.

THE UPSON-WALTON CO.

12500 ELMWOOD AVENUE
CLEVELAND 11, OHIO
New York • Chicago • Pittsburgh

YOU CAN DEPEND ON UPSON-WALTON'S LONG EXPERIENCE—ESTABLISHED 1871

Manufacturers of ALL THREE

TTINGS • WIRE ROPE • TACKLE BLOCKS

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DESIGN CHANGE TO STEEL CUTS WEIGHT 50%

MANY machine designs can be simplified by proper application of welded steel construction. Less material is needed since steel can be formed at low cost to efficient engineering shapes. Steel requires less machining and often eliminates such operations as milling and drilling required with conventional castings.

At Ilg Electric Ventilating Co., Chicago, Illinois, changing over this end bracket to steel provides several distinct advantages. Material cost has been cut considerably as only half as much metal is needed. Also pound for pound steel costs less than gray iron. After welding components in a simple fixture, the only machining that remains is to drill seven holes. Former milling operations are eliminated.

Although half the amount of metal is needed with steel, the part is actually stronger and more rigid than the original construction. It is easier to clean and paint and costs 30% less to produce.

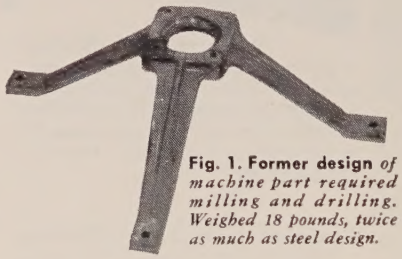

Fig. 1. Former design *of machine part required milling and drilling. Weighed 18 pounds, twice as much as steel design.*

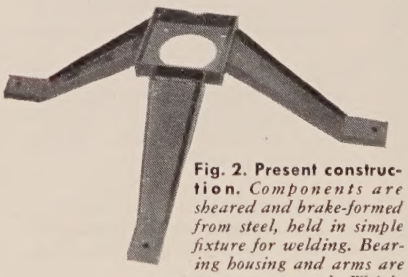

Fig. 2. Present construction. *Components are sheared and brake-formed from steel, held in simple fixture for welding. Bearing housing and arms are 10 gauge metal. Weighs only 8½ pounds. Cost is 30% less.*

Machine Design Sheets showing how to simplify designs and cut costs are available on request. Designers and Engineers write on your letterhead to Dept. 1606.

THE LINCOLN ELECTRIC COMPANY
CLEVELAND 17, OHIO
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

Large or small jobs—

PANGBORN BLAST CLEANING

cuts maintenance cost and time!

Pangborn Blast Cleaning Machine—Cleans tanks, bridges, buildings, and other structures quickly and economically. Ideal for maintenance and other jobs, such as removal of dirt, scale, rust, etc. preparatory to painting. Six sizes, stationary or portable, from . . . **$188** and up.

Pangborn Blast Cabinet—Saves time and money in cleaning small metal parts . . . removing rust, scale, grime, old paint, etc. Produces smooth, clean surfaces on pieces up to 60″ x 35″ in size. Models from . . . **$319** and up.

Pangborn Unit Dust Collectors—Trap dust at the source. Minimize maintenance, allow reclamation of valuable material . . . **$286** and up.

Pangborn Hydro-Finish Cabinets—Remove directional grinding lines, hold tolerances to .0001″. Reduce further finishing of tools, molds, dies . . . **$1410** and up.

Write for details on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment.

Pangborn
BLAST CLEANS CHEAPER
with the right equipment for every job

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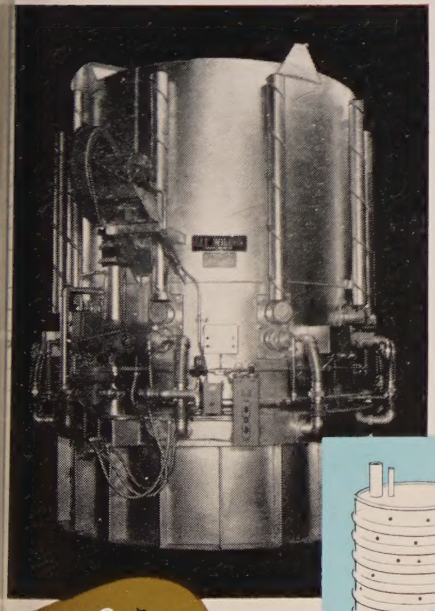
1933 1953

LEE WILSON
Chairman of the Board

20th year of annealing development



1953 * 1933 *

Twenty years ago penicillin, jet planes, radar control and atom bombs were unheard of . . . the nation was in the grip of its most disastrous depression and the steel business was practically at a standstill . . . yet, this was the time Lee Wilson chose to introduce his radiant tube annealing furnace. Steelmakers agreed that here was a great advancement in annealing practice, and as business picked up and steel came alive these steelmen adopted the Lee Wilson system. Constantly working to improve annealing processes, Lee Wilson, a few years later, announced a high convection method for annealing steel and again steel leaders approved.

Today Wilson Furnaces can be found in every leading steel making center the world over . . . and the new Wilson Single Stack Portable Base Furnace is an important topic of conversation whenever annealing is discussed.

In the past twenty years there have been many earth-shaking developments in practically every field of endeavor. To people interested in producing better steel, faster, at lower costs, the constantly new annealing processes of Lee Wilson have been a great part of this advancement.

Lee Wilson Engineering Co., Inc.

Cleveland, Ohio

How TIMKEN® bearings help keep production costs low on a 4-high mill

FEWER time-outs for repair and maintenance mean lower production costs. That's why the work roll, feed reel, tension reel and pinions of this Mesta 4-high tandem cold reduction mill—now in operation at Allegheny Ludlum's West Leechburg plant—are mounted on Timken® tapered roller bearings.

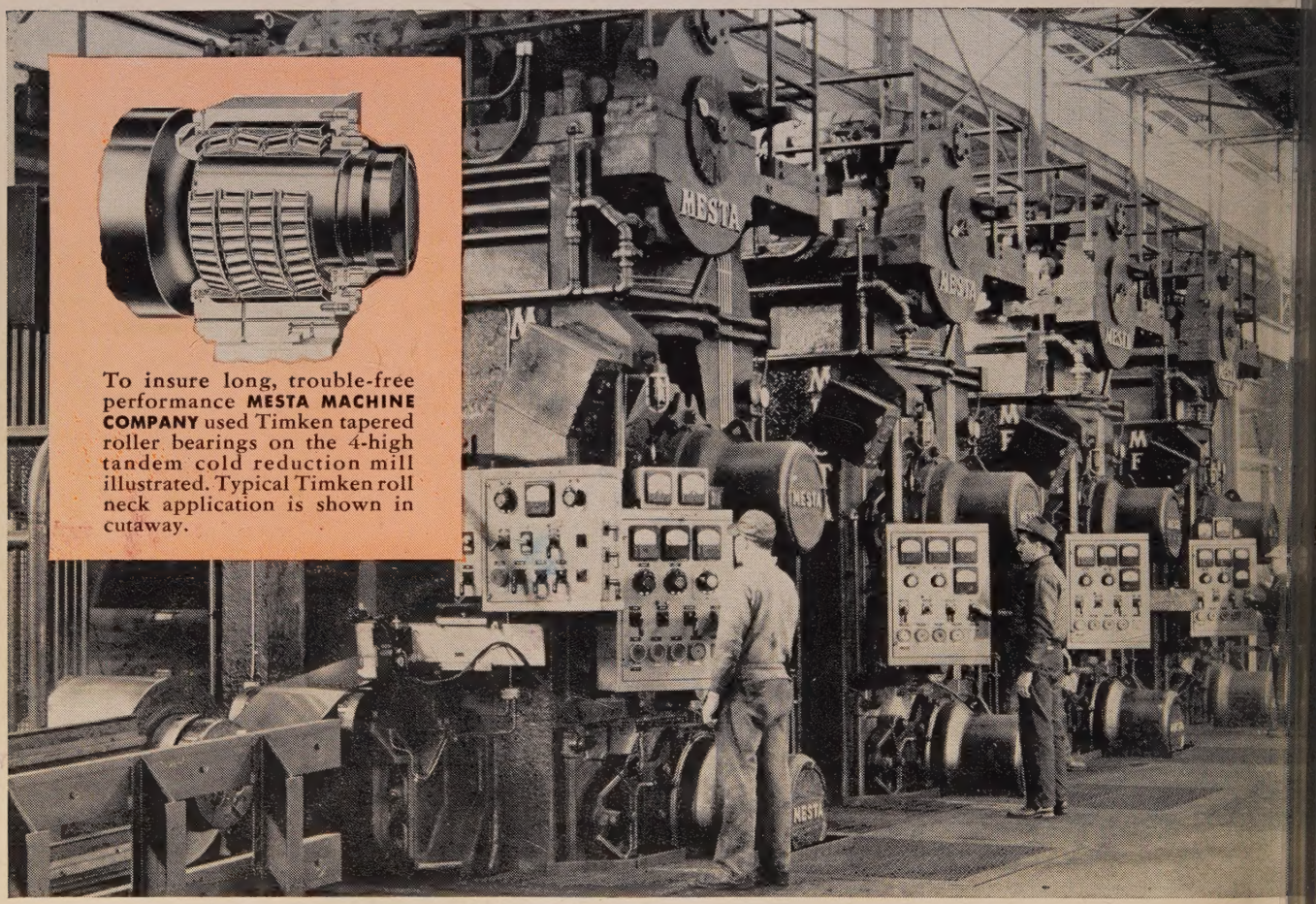
Timken bearings' tapered construction takes all radial and thrust loads in *any* combination. Line contact between rollers and races gives Timken bearings extra load-carrying capacity.

The true rolling motion and extremely smooth surface finish of Timken bearings practically eliminate friction. Shafts and housings are held concentric, closures made more effective. Lubricant stays in —dirt and moisture stay out.

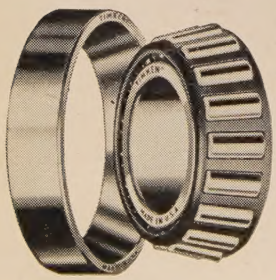
Years of research and development by the Timken Company have resulted in many improvements in roll neck bearing design and performance. For more information about Timken roller bearing applications, write The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN BEARING EQUIPPED

This symbol on a product means its bearings are the best.



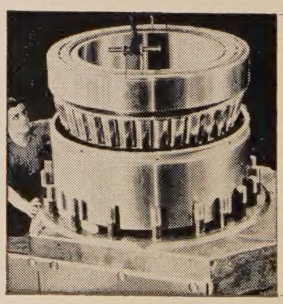
To insure long, trouble-free performance **MESTA MACHINE COMPANY** used Timken tapered roller bearings on the 4-high tandem cold reduction mill illustrated. Typical Timken roll neck application is shown in cutaway.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



ROLL NECK BEARING ENGINEERING SERVICE

Our field and service engineers have had years of experience with problems of roll neck bearing design and operation. They'll help you select bearings and design mountings. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◎ AND THRUST → ◎ ← LOADS OR ANY COMBINATION → ◎ ←